RĪGAS TEHNISKĀ UNIVERSITĀTE
Datorzinātes un informācijas tehnoloģijas fakultāte

Datorvadības, automātikas un datortehnikas institūts

Mātes plates

Prof.V.Zagurskis

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Ievads

Mātes plates galvenokārt atšķiras ar procesora atbalstu, tas ir, kādus procesorus var lietot uz attiecīgās mātes plates. Patreiz pēc procesora spraudņa var izšķirt šādus galvenos mātesplates tipus:

- Socket 370 (Intel Pentium III / Celeron)
- Socket 478 (Intel Pentium 4 / Celeron)
- Socket A (AMD Duron / Athlon / Athlon XP / Athlon MP)
- Slot 2 (Intel Xeon)

Tā kā galvenās mātes plates iespējas nosaka mātes plates mikroprocesoru kopa, tad darbā lielāka uzmanība ir pievērsta mātes plates kontrolieriem. Par galvenām mikroshēmām uz mātesplates var uzskatīt:

- „ziemeļu tiltu" (North Bridge) – sistēmas kontrolieris. Šī mikroshēma visbiežāk ir atbildīga par centrālā procesora (CPU), operatīvās atmiņas un grafiskās kartes (AGP) kopni.
- „dienvidu tiltu" (South Bridge) – perifērijas kopnes kontrolieris. Savukārt šī mikroshēma parasti atbild par perifēriju: PCI, ATA, USB, seriālajiem un paralēlajiem poriem, peli, klaviatūru, kā arī, atsevišķos gadījumos par iebūvēto (integrēto) modēmu, skaņas karti un tīkla interfeisu.

Tālāk tiks uzskaitīti katras mātes plates tipa populārākie sistēmas kontrolieri (informācija uz 2003.gada sākumu), aprakstīts katras kontrolieru kopas pārstāvis (viens no jaunākajiem), tā parametri un maksimālās iespējas, ko tie spēj veikt un mātes plates tipa jaunāko kontrolieru realizācijas piemērs (konkrēta mātes plate).

Socket 370

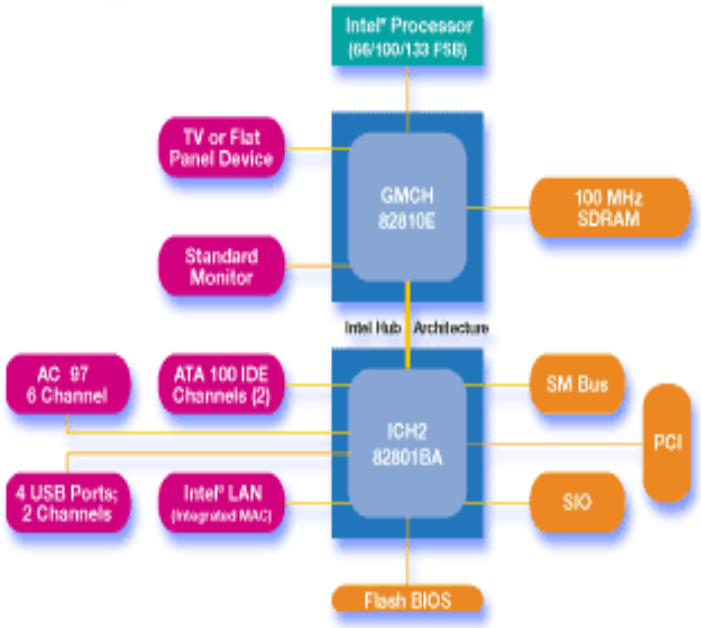
Mātes plates ar Socket 370 centrālā procesora (CPU) spraudni var izmantot sekojošie procesori: Intel Pentium III un Celeron. Patreiz tās ir par pamatu lētākiem, mazāk jaudīgajiem datoriem.

Uz doto momentu populārākajām mātes platēm (MB) ar Socket 370 spraudni par pamatu kalpo sekojošas mātes plates mikroshēmas:

- Intel 815 *(i82815)* sērija (815EP, 815E, 815 u.c.)
- Intel 810 *(i82810)* sērija (810E2, 810E u.c.)
- SiS 630 sērija (SiS630ET, SiS630E, SiS630S, SiS630ST u.c.)
- VIA Technologies 133 sērija (PLE133, PLE133T, PRO133A, PRO133T u.c.)
- VIA Technologies 266 sērija (PRO266, CLE266 u.c.)

- **Intel 810E2**

Intel® 810E2 mikroprocesors iekļauj atjautīgu grafisko integrāciju un elastīgu I/O tehnoloģiju, lai apgādātu ar cenai atbilstošu efektivitāti un elastīgu Intel® Celeron® vai Pentium® III procesoru platformu konstrukcijas.

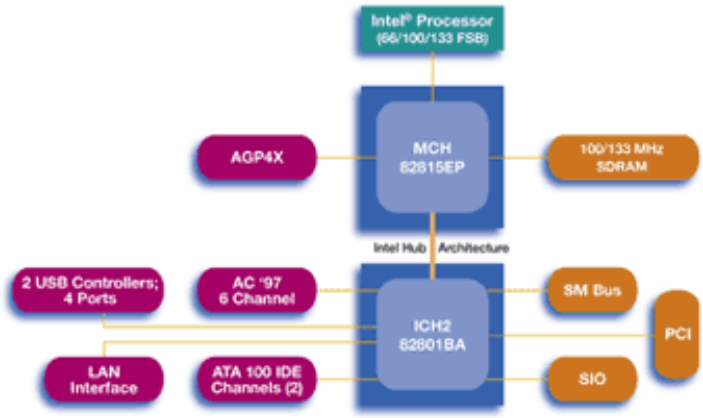


Intel® 810E mikroprocesora pazīmes un ieguvums (labums)

Īpatnības	**Priekšrocības**
Intel® Hub Architecture	Increased I/O bus bandwidth allows better concurrency for nextgeneration e-Business applications
Intel® Graphics Technology	More stable platform, higher quality graphics, reduced OEM support costs
Ultra ATA100	Takes advantage of the latest industry innovations in HDD features and performance, delivering the fastest IDE transfers
Alert on LAN 2.0	Emits an alert in case of software failures or system intrusion, even when the O/S is not present or the system is suspended.
Front Side Bus	Supports 66 MHz, 100 MHz and 133 MHz configurations
SDRAM	100 MHz SDRAM support
Low power sleep mode	Energy savings
Quad USB	Full plug-and-play compatibility for next generation peripherals, utilizing two controllers for four ports, with 24Mbps
Intel® 3D with Direct AGP	Vivid 2D and 3D graphics
Communications Network Riser card (CNR)	Allows multiple configurations on a single card to extend LAN, audio and modem for greater flexibility and ease of configuration
AC97 Controller	Better audio quality, with up to six channels and surround sound capability
Digital Video Output	Allows connection of traditional TV or new digital flat-panel displays; compatible with DVI specification
Soft DVD MPEG-2 playback with HW motion compensation	Lifelike audio and video

- **Intel 815EP**

With the Intel® 815EP chipset, Intel delivers an external graphics solution for PC133/100 SDRAM platforms with all the performance, innovative features and proven reliability of the Intel® 815 chipset family. Pin-to-pin compatible with the Intel® 815E chipset, the 815EP chipset supports 133/100/66 MHz system bus for Intel® Celeron® or Pentium® III processors based on .13 micron or .18 micron process technology.



Intel® 810E mikroprocesora pazīmes un ieguvums (labums)

Pazīmes	**Ieguvums**
Intel® Hub Architecture	Increased I/O bus bandwidth allows better concurrency for next-generation e-Business applications
Integrated LAN connect interface	Flexibility for multiple, cost-effective network solutions, from home PNA to 10/100 Mbps Ethernet with LAN manageability.
Intel® Pentium® III Processor and Intel® Celeron® Processor support	Flexibility to support 66 MHz, 100 MHz, and 133 MHz configurations
SDRAM Support	Support for 100/133MHz SDRAM; a cost-effective, high-volume memory support
AGP4X Port	2X increase in graphics bandwidth over AGP2X allows highest graphics performance
Communications and Network Riser (CNR) Support	Allows multiple configurations on a single card to extend USB, LAN, and audio for greater flexibility and ease of configuration
ATA100	Hard disk drive data/file transfer
AC97 Controller	Better audio quality, with up to six channels and surround sound capability
Quad USB Ports	Two controllers for four ports, doubling the bandwidth to 24 Mbps
Low power sleep mode	Energy savings
Single driver for LAN	Single LAN driver across all Intel solutions, from home PNA to our PCI controllers
Alert on LAN* 2.0	Emits an alert in case of software failures or system intrusion, even when the O/S is not present or the system is suspended

- **SiS630S & SiS630ST**

The single chipset, SiS630ST & SiS630S, provides a high performance/low cost Desktop solution for the Intel Slot 1 and socket 370 series CPUs based system by integrating a high performance North Bridge, advanced hardware 2D/3D GUI engine, Super-South bridge and an AGP4X Slot. In addition, SiS630ST & SiS630S provides system-on-chip solution that complies with Easy PC Initiative which supports Instantly Available/OnNow PC technology, USB, Legacy Removal and Slotless Design and FlexATX form factor.

By integrating the UltraAGPTM technology and advanced 64-bit graphic display interface, SiS630ST & SiS630S delivers AGP 4x performance and memory bandwidth of up to 1 GB/s. In addition, SiS also supports an extra AGP Slot that supports 4X and Fast Write transactions. Furthermore, SiS630ST & SiS630S provides powerful hardware decoding DVD accelerator to improve the DVD playback performance. In addition to providing the standard interface for CRT monitors , SiS630ST & SiS630S also provides the Digital Flat Panel Port (DFP) for a standard interface between a personal computer and a digital flat panel monitor.

To extend functionality and flexibility, SiS also provides the "Video Bridge"(SiS301) to support the NTSC/PAL Video Output, Digital LCD Monitor and Secondary CRT Monitor, which reduces the external Panel Link transmitter and TV-Out encoder for cost effected solution. SiS630ST & SiS630S adopts Share System Memory Architecture which can flexibly utilize the frame buffer size up to 64MB.
The !!iÓSuper-South Bridge!!L in SiS630ST & SiS630S integrates all peripheral controllers/accelerators /interfaces. SiS630ST & SiS630S provides a total communication solution including 10/100Mb Fast Ethernet for Office requirement and 1Mb HomePNA for Home Networking. SiS630ST & SiS630S offers AC!|97 compliant interface that comprises digital audio engine with 3D-hardware accelerator, on-chip sample rate converter, and professional wavetable along with separate modem DMA controller. SiS630ST & SiS630S also provides interface to Low Pin Count (LPC) operating at 33 MHz clock which is the same as PCI clock on the host, and dual USB host controllers with six USB ports that deliver better connectivity and 2 x 12Mb bandwidth.

The built-in fast PCI IDE controller supports the ATA PIO/DMA, and the Ultra DMA33/66/100 function that supports the data transfer rate up to 100 MB/s. It provides the separate data path for two IDE channels that can eminently improve the performance under the multi-tasking environment.

Pazīmes	**Ieguvums**
System bus capability	Supports both 100MHz and 133MHz single processor configuration
SiS UltraAGPTM Graphics Technology	Saving system cost. Enhance system stability, quality and performance.
Front Side Bus	Flexibility to support 66MHz, 100MHz and 133MHz configurations.
PC133 Compatible	Support PC100 and PC133 SDRAM. (refer to SiS630ST & SiS630S Presentation,page 3)
4X AGP upgrade flexibility	Make system performance upgrade and useri¦s facilitation. ((refer to SiS630ST & SiS630S Presentation,page 6)
Digital Video Interface	Dual monitor, 2nd CRT, LCD or TV used through SiS301 card, can expand PC application or twice your time management.(refer to SiS630ST & SiS630S Presentation,page 3 and page 6)
3D stereo glasses	Directly supporting 3D stereo glasses from main boards. Enriching useri¦s virtual scenes. (refer to SiS630ST & SiS630S Presentation,page 6 and 8)
ATA100 enhancement	Fastest storage support. Increasing data/file transfer rate. (refer to SiS630ST & SiS630S Presentation,page 3)
AC97 Controller	Hollywood 3D stereo enriches audio surrounding with up to six channels. (refer to SiS630ST & SiS630S Presentation,page 3 and 9)
H/W DVD accelerator with MC, IDCT and VLD enhancement	High performance and smooth DVD playback. H/W accelerator saves CPU utilization. (refer to SiS630ST & SiS630S Presentation,page 10 ,11 and 12)
ACR(Advanced Communications Riser) card support	Allow multiple configurations on a single card to extend USB, LAN, HomePNA, modem, and audio for greater flexibility. Compatible to PCI with minimum design changes.(refer to

	SiS630ST & SiS630S Presentation,page 3 and 6)
Integrated Communication Controller for LAN or HPNA use	MII interface used for 10/100MHz LAN or 1Mbps HomePNA function. Reaching cost-effective solution and design elasticity. (refer to SiS630ST & SiS630S Presentation,page 3)
Dual USB Controllers	Two controllers for six ports, achieving real legacy free systems. (refer to SiS630ST & SiS630S Presentation,page 3)

- **VIA Apollo PLE133T**

Powerful & Scaleable Integrated Platform
With its rich built-in multimedia, communications, and networking features, the VIA Apollo PLE133T chipset delivers excellent levels of scalability and performance on a cost-effective, integrated chipset platform designed for the specific needs of the Value PC, Information PC and Internet Appliance market segments.

Key Features

- **Supports Intel? Celeron™, Intel? Pentium™ III (including Tualatin), and VIA C3™ processors**
- **66/100/133MHz FSB settings**
- **Integrated AGP 4X graphics core**
- **Support for PC100/133 SDRAM**
- **Support for Advanced Communications Riser (ACR)**
- **Integrated AC'97, MC'97 Audio/Modem**
- **Integrated 10/100Mb BaseT Ethernet controller or 1/10Mb Home PNA**
- **Support for ATA 33/66**
- **4 USB ports, UHCI compliant**
- **Integrated Super I/O**
- **Support for LPC (Low Pin Count) bus Support for CRT, Digital Flat Panel and TV display**
- **Integrated hardware monitoring**
- **Advanced power management capabilities**
- **510-pin BGA VT8602 North Bridge**
- **376-pin BGA VT82C686B South Bridge**

The VIA Apollo PLE133T combines integrated AGP 4X graphics and AC'97 audio capabilities with support for PC133 SDRAM to provide a highly scalable solution for building Value PCs using the industry standard Socket 370 platform. In addition to featuring support for the forthcoming Intel? Tualatin processor, the VIA Apollo PLE133T is also fully backward compatible with both the Intel? Pentium? III and Intel? Celeron™ processors as well as the VIA C3™ processor. Its support for PC133 SDRAM ensures ample memory bandwidth for the most demanding software and Internet applications at minimal cost and the flexibility of the platform is further demonstrated by ACR support allowing full communications integration. A wide range of additional features provides OEMs and System Integrators with the flexibility to reduce the cost of building innovative Information PCs and Digital PC Appliances without sacrificing features and performance. These include an integrated 10/100 BaseT Ethernet and home PNA controller, AC'97 audio, MC'97 modem, Super I/O, hardware monitoring capabilities, and support for four USB ports, ATA-100, and Advanced Power Management.

Features and Benefits Summary

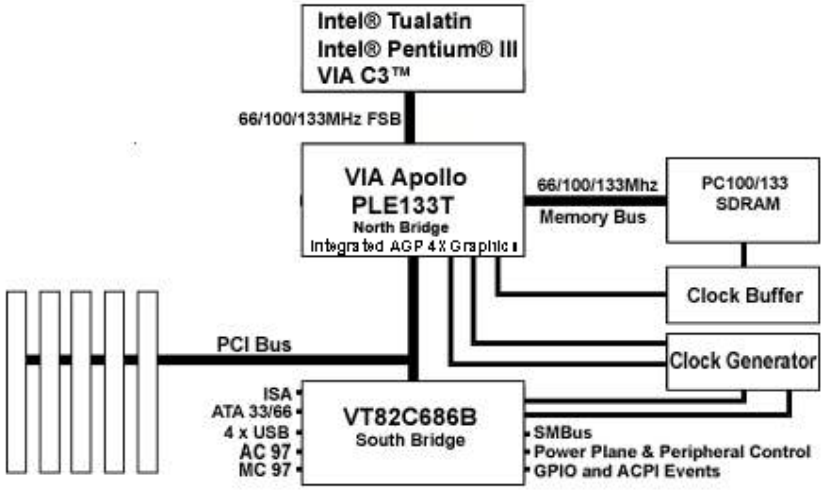
Pazīmes	**Ieguvums**
133MHz Memory Bus	PC133 SDRAM offers the bandwidth necessary to squeeze great performance out of the latest generation processors and multimedia software applications.
Flexible 66/100/133MHz Front Side Bus Settings	The VIA Apollo PLE133T's 66/100/133 MHz Front Side Bus is optimized for a full range of Intel?Tualatin, Intel? Pentium? III Intel? Celeron™, and VIA C3™ processors, allowing OEMs and

	system builders to choose the processor that best fits their target price point.
Itegrated AGP Graphics Engine	Delivers rich AGP graphics capabilities for demanding software and Internet multimedia applications with comprehensive driver support.
ATA 66 Support	**Enhances PC system responsiveness through high-speed HDD connections.**
10/100 BaseT Ethernet Controller	Minimizes the cost of high-speed LAN or cable modem connections.*
AC'97 Audio	Provides cost-effective solution for delivering high-quality audio capabilities.**
MC'97 Modem	Enables low-cost connectivity to the Internet through an AMR fax/modem module.
Support for Four USB Ports	Provides convenient plug and play connections to the growing number of USB peripherals and enables Legacy Free system designs.

*** Requires integrated PHY on board**
**** Requires onboard audio CODEC or ACR expansion slot on motherboard**

Innovative & Scalable Architecture

The VIA Apollo PLE133T chipset is based on an innovative and scaleable architecture with proven reliability and performance. It is a two-chip set consisting of the VT8602 North Bridge Controller and VT82C686B South Bridge Controller, as shown in the block diagram below. Additional key features include support for four USB ports, AC-97 link for audio and modem, hardware monitoring, and power management.



- **VIA Apollo Pro266T**

The New Standard for Socket 370 Performance PCs
The VIA Apollo Pro266T provides the highest performance and most scalable Socket 370 chipset solution for today's increasingly demanding server, workstation, and PC applications. With its support for DDR200/266 SDRAM, the VIA Apollo Pro266T has the headroom necessary to deliver optimum system performance by doubling memory data throughput and reaching a peak memory bandwidth of 2.1GB per second while at the same time leveraging the cost benefits of SDRAM infrastructure.

Key Features

- **Supports Intel? Pentium? III (including Tualatin), Intel? Celeron™ & VIA C3™ Processors**
- **66/100/133MHz FSB Settings**
- **Support for AGP 2X/4X**
- **Supports up to 4.0GB DDR200/266 SDRAM as well as PC100/133 SDRAM and Virtual Channel memory**
- **266MB/sec high bandwidth North/South Bridge V-Link**
- **Support for Advanced Communications Riser (ACR) Card Standard**
- **Integrated 6 Channel AC'97 Audio**
- **Integrated MC'97 Modem**
- **Integrated 3Com 10/100 MAC controller**
- **Support for ATA 33/66/100**
- **6 USB ports, UHCI compliant**
- **Advanced power management capabilities**
- **552-pin BGA VT8653 North Bridge**
- **376 -pin BGA VT8233 South Bridge**

Through its advanced V-Link memory controller architecture, the VIA Apollo Pro266T chipset supports up to 4.0GB of the latest high-speed DDR200/266 SDRAM at a peak bandwidth of 2.1GB per second. These advanced memory technologies provide the bandwidth and performance necessary for even the most demanding Internet and 3D graphics applications at a minimal cost premium over PC133 SDRAM. DDR266 SDRAM lowers memory power consumption to 2.5 volts, providing the ideal solution for small form factor desktops and notebooks.

The AGP4X interface on the VIA Apollo Pro266T chipset ensures vivid 3D graphics and video performance, while its 133MHz Front Side Bus optimizes the performance of the latest Intel? Pentium? III processors. VIA's commitment to delivering optimal performance at lower costs is further demonstrated through integration of the 3Com 10/100 Ethernet Media Access Controller, HomePNA, AC'97 audio and MC'97 modem into the South Bridge. Additional key features include support for 6 USB ports, ATA 100 and Advanced Power Management.

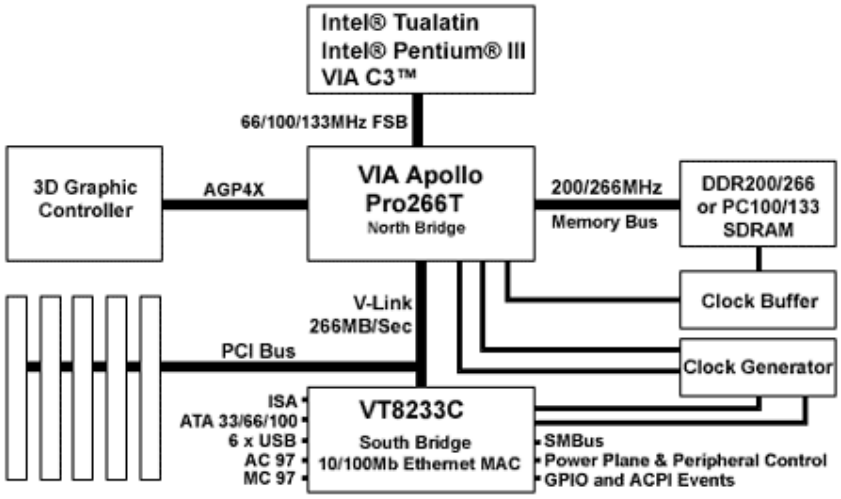
VPX-64 64bit/66MHz PCI Controller
The VPX-64 64bit PCI Controller (model number VT8101) is a companion chip that allows existing VIA chipsets to support high-bandwidth 64bit PCI in both 33MHz and 66MHz modes. VPX-64 enables VIA Apollo chipsets to offer up to 533MB/s of PCI bandwidth for high end peripherals like Gigabit Ethernet, Fibre Channel and Ultra SCSI/320 and is perfect for implementation in server systems based on the VIA Apollo Pro266T. VPX-64 also supports up to six traditional 32bit/33MHz PCI devices, allowing VPX-64 equipped system designs to support no less than 10 PCI devices, and up to 12 in total. VPX-64 is available in a 27x27mm, 265 pin PGA package. VPX-64 interfaces directly to the dual mode AGP/XIP port present in existing V-MAP compatible chipsets. To find out more download the VPX Whitepaper

Pazīmes	Ieguvums
200/266MHz Memory Bus	Maximizes the performance of Value PCs and Internet Appliances at minimal extra cost through support for high-speed DDR200/266
Flexible 66/100/133MHz Front Side Bus Settings	Optimizes the performance of a complete range of Intel? Pentium? III, Intel? Celeron™, and the VIA C3™ processors running at a variety of FSB speeds.
V-Link Hub Architecture	Dedicated 266MB/sec link between the North and South Bridge, doubling the bandwidth of the traditional PCI Bus.
AGP4X Interface	Ensures vivid 3D graphics and video performance.
ATA 100 Support	Enhances PC system responsiveness through high-speed HDD connections.
AC'97 Audio and MC'97 Modem	Provides cost-effective solution for delivering high-quality audio capabilities* and enables low-cost connectivity to the Internet through an ACR fax/modem module.
Integrated 3Com 10/100 MAC controller (VT8233C)	Leading edge technology to give network ready status to VIA Apollo Pro266T based systems.
Support for Six USB Ports	Provides convenient Plug and Play connections to the growing number of USB peripherals and enables Legacy Free system designs.

*Requires onboard audio Codec or ACR expansion slot on the motherboard.

Innovative & Scaleable Architecture

The VIA Apollo Pro266 chipset is based on an innovative and scaleable architecture with proven reliability and performance. It is a two-chip set consisting of the VT8653 North Bridge Controller and the VT8233C South Bridge Controller with 3Com Ethernet MAC (see the block diagram below). Additional key features include support for six USB ports, AC-97 link for audio and modem, hardware monitoring, and ACPI/OnNow power management.



- **Mātesplates piemērs: Chaintech 6VJD2**

Hardware
- CPU Intel® Socket 370
- System frequency 66/100/133 Mhz
- Chipset VIA PRO266 + VT8233
- Memory (2) DDR DIMM (2GB) + (2) DIMM (2GB)

Physical
- Form Factor: ATX
- Dimensions: 305mm x 230mm

Expansion
- Internal upgrade slots (5) PCI, (1) AGP,(1) CNR (1)ACR
- IDE bus (2) UDMA-66/100 connectors

AV Subsystems
- Audio CMI 8738-6CH / Option AC97 Codec

CPU
- Supports Intel® Socket 370CPU
- System clock supports 66/100/133 MHz

Chipset
- VIA PRO266 + VT8233

Main Memory
- Two 184 pin DDR DIMM + two 168pin DIMM up to 2GB
- Supports PC100/PC133 SDRAM or PC1600/PC2100 DDR SDRAM modules

Expansion Slots
- One Universal-AGP slot for both 2x/4xAGP (v2.0 compliant)
- Five 32-Bit PCI slots (v2.2 compliant)
- One ACR slot support modem,audio and LAN riser
- One CNR slot support modem,audio riser

Audio Subsystem
- On-board audio 8738
- Full-duplex operation for simultaneous recording and playback
- 6 Channel speaker audio support
- Embedded 32OHM .5w earphone amplifier
- Support MIDI and Dual game ports
- 32 Voice HRTF 3D positional audio , CRL 3D supports MS Direct
- Sound3D,Aureal A3D and Creative EAX APIs
- Support SPDIF (Optional)
- **Option Audio subsystem via AC-link**
- with external high quality AC'97 CODEC
- Complete software driver support for Win95/Win98

Video Subsystem
- One Universal-AGP slot for both 2x/4xAGP (v2.0 compliant)

UltraDMA IDE Ports
- Two UltraDMA-66/100 IDE Ports
- Supports PIO Mode 4 up to 16.6 MB/s, Multi-Word DMA Mode 2 and Ultra DMA mode 5 up to 100MB/s

with Bus Mastering
- Bus-Mastering software drivers for all common multitasking operating systems

Embedded USB Controller
- UHCI compliant USB host controller with Root hub
- Six USB ports (UHCI v1.0 compliant) w/ over-current protection
- Optional USB adapter for additional USB ports

On Board Super I/O Controller
- On board ITE 8705 Super I/O Functions
- Three UARTs
- Supports two serial port and IR function (up to 115.2Kbps) for HPSIR and ASKIR
- One SPP/ECP/EPP parallel port
- One floppy disk drive connector supports up to 2.88MB

Embedded system monitoring
- 8 external voltage inputs
- 2 temperature sensing for CPU and system
- 2 Fan speed (CPU and system) monitoring and control with on/off control in suspend

Software
- Driver CD (Chipset Autodetect)
- Value Pack 2002

Socket 478

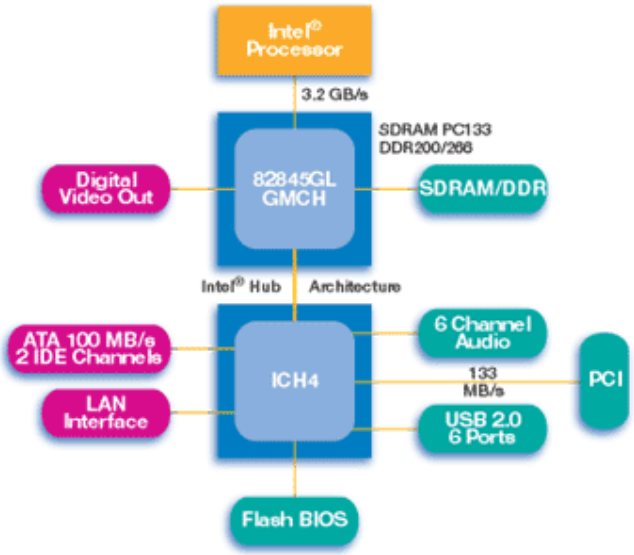
Mātesplates ar Socket 478 centrālā procesora (CPU) spraudni var izmantot sekojošie procesori: Intel Pentium 4 un jaunākie Celeron. Tās ir vidējas un vidēji augstas veiktspējas datoru pamatā.

Uz doto momentu populārākajām mātesplatēm (MB) ar Socket 478 spraudni par pamatu kalpo sekojošas mātesplates mikroshēmas:

- Intel 845 *(i82845)* sērija (845G, 845E, 845GL, 845D, 845)
- Intel 850 *(i82850)* sērija (850, 850E)
- SiS 645 sērija (SiS645DX, SiS645)
- SiS 650 sērija (SiS650, SiSM650)
- VIA Technologies P4X266 sērija (P4X266E, P4X266A, P4X266)
- VIA Technologies P4X400 sērija (P4X400)

- **Intel 845GL**

The Intel® 845GL chipset enables a higher level of computing at value system price points. The integrated Intel® Extreme Graphics delivers an extremely stable, extremely reliable and extremely innovative architecture. The 845GL chipset offers an available main memory bandwidth of DDR266MHz, while maintaining backward compatibility with PC133 SDRAM.

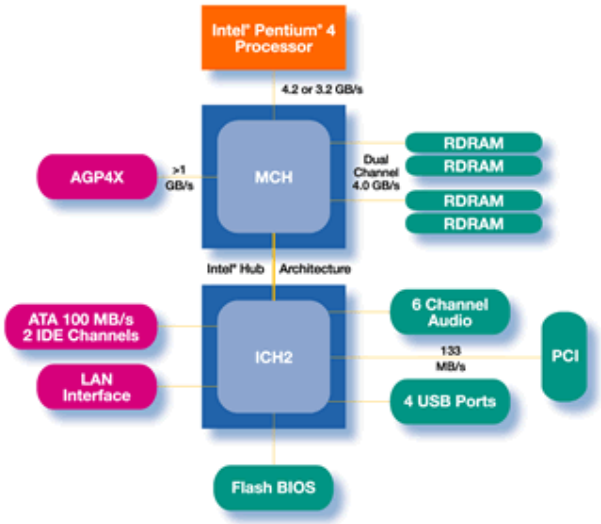


Intel® 845GL Chipset Features & Benefits

FEATURES	BENEFITS
400MHz System Bus	Support for 400MHz FSB Intel® Celeron® processors. Will also support 400MHz Intel® Pentium® 4 processors.
Intel® Extreme Graphics	Revolutionary graphics architecture supports the latest APIs, allowing software developers to create real-life environments and characters.
Intel® Hub Architecture	Dedicated data paths that deliver maximum bandwidth for I/O intensive applications.
PC133 or DDR266/200 SDRAM	Flexible memory technology allows DDR usage for higher system performance, or PC133 for cost-effective systems.
LAN connect interface	Flexible networking options take advantage of Intel® SingleDriver™ technology
Alert on LAN* 2.0	Emits an alert in case of software failures or system intrusion, even when the O/S is not present or the system is suspended.
Hi-Speed USB 2.0 (6 ports)	Hi-Speed USB 2.0 offers up to 40x greater bandwidth over original USB 1.1 for demanding I/O peripherals.
Ultra ATA/100	Takes advantage of the latest industry innovations in HDD features and performance.
Intel® Application Accelerator	Software exclusive to Intel platforms that helps accelerate boot time and application launch times.
AC'97 Controller	Excellent audio quality, with up to six channels for full surroundsound capability including a simultaneous modem connection.
Communications Network Riser Card	Allows flexibility for multiple configurations on a single card to extend USB, LAN, and audio.
Low-power sleep mode	Energy savings

- **Intel 850 mikroprocesoru kopa**

The Intel® 850E chipset extends the capabilities of the Intel® 850 chipset platform by adding 533 MHz system bus and PC1066 memory support for the Intel® Pentium® 4 processor



Intel® 850 Chipset Features & Benefits

FEATURES	BENEFITS
533/400MHz system bus	Supports 533MHz (850E chipset only) and 400MHz system bus for single processor configurations
Intel® Hub Architecture	Increased I/O bus bandwidth allows better concurrency for media-rich applications and multitasking
Dual RDRAM capability	Provides up to 4.0 GB/s memory bandwidth, balancing performance for the Intel® Pentium® 4 processor based platform
AGP4X interface	2X increase in graphics bandwidth allows highest graphics performance
LAN connect interface	Multiple networking options taking advantage of Intel® SingleDriver™ technology
Alert on LAN 2.0	Emits an alert in case of software failures or system intrusion, even when the O/S is not present or the system is suspended
Dual USB controllers	Two controllers for four ports double the bandwidth at 24 Mbps
Ultra ATA/100	Takes advantage of the latest industry innovations in hard disk drive features and performance. Intel® Application Accelerator provides additional performance over standard ATA drivers.
AC'97 Controller	Better audio quality, with up to six channels for full surround-sound capability including a simultaneous modem connection
Communications Network Riser Card	Allows flexibility for multiple configurations on a single card to extend USB, LAN, and audio
Low-power sleep mode	Energy savings

- **SiS645**

SiS645 HMAC overview

The SiS645 Host & Memory & AGP Controller integrates a high performance host interface for Intel Pentium 4 processor, a high performance memory controller, a AGP interface, and SiS MuTIOL® R Technology connecting w/ SiS961 MuTIOL® Media IO.

The SiS645 Host Interface features the AGTL & AGTL+ compliant bus driver technology with integrated on-die termination to support Intel Pentium 4 series processors with FSB up to 400MHz. It provides a 12-level In-Order-Queue to support maximum outstanding transactions on host bus up to 12. The host interface plays the role of processor transactions!| dispatcher. It dispatches transactions to Memory, I/O interface and AGP bus. Transactions to different destinations can be dispatched concurrently in order to maximum pipeline efficiency. In addition to dispatching processor!|s transactions to corresponding destinations, host interface also forward DMA transactions from AGP masters and I/O masters to host bus for snooping, including master interrupt delivery.

The memory controller can support both DDR and SDR. It can offer bandwidth up to 2.7GB/s under DDR333 and 1GB/s under PC133 in order to sustain the bandwidth demand from host processor, as well as the multi I/O masters and AGP masters. The Memory Controller mainly comprises the Memory Arbiter, the M-data/ M-Command Queues, and the Memory Interface. The Memory Arbiter arbitrates a plenty of memory access Host Controller, and I/O bus masters based on a default optimized priority list with the capability of dynamically prioritizing the I/O bus master requests in a bid to offering privileged service to 1) the isochronous downstream transfer to guarantee the min. latency & timely delivery, or 2) the PCI master upstream transfer to curb the latency within the maximum tolerant period of 10us. Prior to the memory access requests pushed into the M-data queue, any command compliant to the paging mechanism is generated and pushed into the M-CMD queue. The M-data/M-CMD Queues further orders and forwards these queuing requests to the Memory Interface in an effort to utilizing the memory bandwidth to its utmost by scheduling the command requests in the background when the data requests streamlines in the foreground. The memory controller also supports the Suspend to RAM function by retaining the CKE# pins asserted in ACPI S3 state in which only AUX source deliver power.

The AGP interface can support external AGP slot with AGP 1X/2X/4X capability and Fast Write Transactions. A high bandwidth and mature SiS MuTIOL® technology is incorporated to connect SiS645 and SiS961 MuTIOL® Media I/O together. SiS MuTIOL® technology is developed into three layers, the Multi-threaded I/O Link Layer delivering 1.2GB bandwidth to connect embedded DMA Master devices and external PCI masters to interface to Multi-threaded I/O Link layer, the Multi-threaded I/O Link Encoder/Decoder in SiS961 to transfer data w/ 533 MB/s bandwidth from/to Multi-threaded I/O Link layer to/from SiS645, and the Multi-threaded I/O Link Encoder/Decoder in SiS645 to transfer data w/ 533 MB/s from/to memory sub-system to/from the Multi-threaded I/O Link Encoder/Decoder in SiS961.

SiS961 MuTIOL® Media I/O overview

The SiS961 MuTIOL® Media I/O integrates the Audio Controller with AC 97 Interface, the Ethernet MAC, the Dual Universal Serial Bus Host Controllers, the IDE Master/Slave controllers, and the MuTIOL® Connect to PCI bridge. The PCI to LPC bridge, I/O Advanced Programmable Interrupt Controller, legacy system I/O, I/O Advanced Programmable Interrupt Controller and legacy power management functionalities are also integrated. The SiS961 also incorporates an universal interface supporting the asynchronous inputs/outputs of the X86 compatible microprocessors like PIII, K7, and P4.

The Integrated Audio Controller features a 6 channels of AC 97 v2.2 compliance audio to present 5.1-channel Dolby digital material or to generate stereo audio with simultaneous V.90 HSP modem operation. Besides, 4 separate SDATAIN pins are provided to support multiple audio Codecs + one modem Codec maximally, effectuating the realization of 5.1 channel Dolby digital material in theater quality sound. Both traditional consumer digital audio channel as well as the AC 97 v2.2 compliant consumer digital audio slot are supported. VRA mode is also associated with both the AC 97 audio link and the traditional consumer digital audio channel.

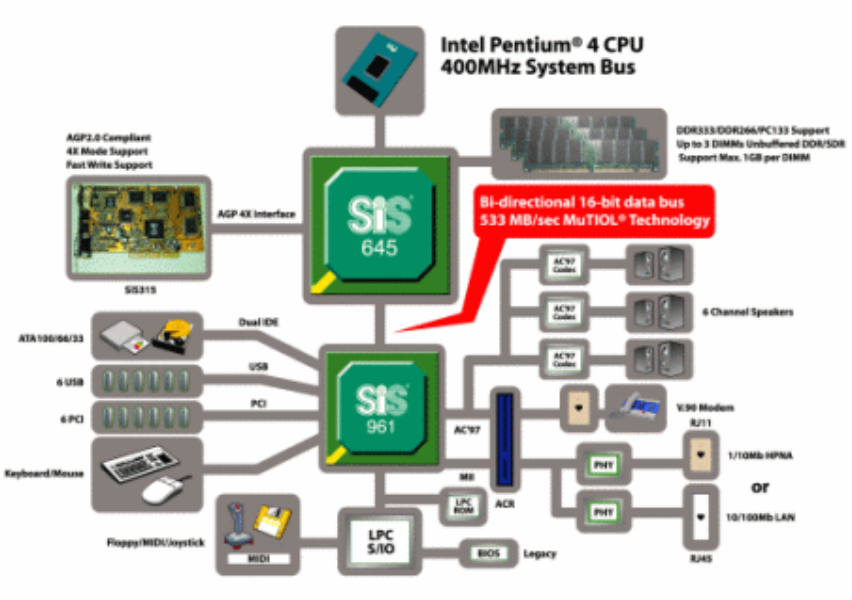
The integrated Fast Ethernet MAC features an IEEE 802.3 and IEEE 802.3x compliant MAC supporting full duplex 10 Base-T, 100 Base-T Ethernet, or 1Mb/s & 10Mb/s Home networking. 5 wake-up Frames, Magic Packet and link status change wake-up functions in G1/G2 states are supported. Besides, the integrated MAC provides a scheme to store the MAC address without the need of an external EEPROM. The 25 MHz oscillating circuit is integrated so as only an external low cost 25 MHz crystal is needed for the clocking system.

The integrated Universal Serial Bus Host Controllers features Dual Independent OHCI Compliant Host controllers with six USB ports delivering 2 x 12 Mb/s bandwidth and rich connectivity. Besides, each port can be optionally configured as the wake-up source. Legacy USB devices as well as over current detection are also implemented. The integrated IDE Master/Slave controllers features Dual Independent IDE channels supporting PIO mode 0,1,2,3,4, and Ultra DMA 33/66/100. It provides two separate data paths for the dual IDE channels that sustain the high data transfer rate in the multitasking environment. The MuTIOL® Connect to PCI bridge supporting 6 PCI master is compliant to PCI 2.2 specification. The SiS961 also incorporates the legacy system I/O like: two 8237A compatible DMA controllers, three 8254 compatible programmable 16-bit counters, hardwired keyboard controller and PS2 mouse interface, Real Time clock with 256B CMOS SRAM and two 8259A compatible Interrupt controllers. Besides, the I/O APIC managing up to 24 interrupts with both Serial and FSB interrupt delivery modes is supported.

The integrated power management module incorporates the ACPI 1.0b compliance functions, the APM 1.2 compliance functions, and the PCI bus power management interface spec. v1.1. Numerous power-up events and power down events are also supported. 21 general purposed I/O pins are provided to give an easy to use logic for specific application. In addition, the SiS961 supports Intel Speed Step technology and Deeper Sleep power state for Intel Mobile processor. For AMD processor, the

SiS961 use the CPUSTP# signal to reduce processor voltage during C3 and S1 state.

To resolve the PCI-133 bandwidth bottleneck, 3 technologies are utilized in SiS961, namely multiple DMA buses, Multi-threaded I/O Link, and MuTIOL® Connect. Instead of connecting all the I/O bus masters to the PCI bus, each integrated I/O bus master as well as the PCI master clusters is offered a dedicated DMA bus with separate address bus, input data bus, and output data bus that features pipeline & split transaction. The integrated Multi-threaded I/O Link further buffers and manages these multiple DMA buses to ensure concurreny of multiple upstream and downstream data transfers. Finally, the MuTIOL® Connect interfaced the Multi-threaded I/O Link interconnects the SiS961 to a series of SiS NBs, including but not limited to SiS640, SiS740, SiS645, and SiS650. The MuTIOL® Connect features a bi-directional 16 bit data bus operating in 4 x 66MHz delivering 533MB/s bandwidth.



- **SiS650**

SiS650 Overview

SiS650 IGUI Host Memory Controller integrates a high performance host interface for Intel Pentium 4 processor, a high performance 2D/3D Graphic Engine, a high performance memory controller, an AGP 4X interface, and SiS MuTIOL® Technology connecting w/ SiS961 MuTIOL® Media IO.

SiS650 Host Interface features the AGTL & AGTL+ compliant bus driver technology with integrated on-die termination to support Intel Pentium 4 processors. SiS650 provides a 12-level In-Order-Queue to support maximum outstanding transactions up to 12. It integrated a high performance 2D/3D Graphic Engine, Video Accelerator and Advanced Hardware Acceleration MPEGI/MPEGII Video Decoder for the Intel Pentium 4 series based PC systems. It also integrates a high performance 2.1GB/s DDR266 Memory controller to sustain the bandwidth demand from the integrated GUI or external AGP master, host processor, as well as the multi I/O masters. In addition to integrated GUI, SiS650 also can support external AGP slot with AGP 1X/2X/4X capability and Fast Write Transactions. A high bandwidth and mature SiS MuTIOL® technology is incorporated to connect SiS650 and SiS961 MuTIOL® Media I/O together. SiS MuTIOL® technology is developed into three layers, the Multi-threaded I/O Link Layer delivering 1.2GB bandwidth to connect embedded DMA Master devices and external PCI masters to interface to Multi-threaded I/O Link layer, the Multi-threaded I/O Link Encoder/Decoder in SiS961 to transfer data w/ 533 MB/s bandwidth from/to Multi-threaded I/O Link layer to/from SiS650, and the Multi-threaded I/O Link Encoder/Decoder in SiS650 to transfer data w/ 533 MB/s from/to Multi-threaded I/O Link layer to/from SiS961.

An Unified Memory Controller supporting PC133 or DDR266 DRAM is incorporated, delivering a high performance data transfer to/from memory subsystem from/to the Host processor, the integrated graphic engine or external AGP master, or the I/O bus masters. The memory controller also supports the Suspend to RAM function by retaining the CKE# pins asserted in ACPI S3 state in which only AUX source deliver power. The SiS650 adopts the Shared Memory Architecture, eliminating the need and thus the cost of the frame buffer memory by organizing the frame buffer in the system memory. The frame buffer size can be allocated from 8MB to 64MB.

The Integrated GUI features a high performance 3D accelerator with 2 Pixel / 4 Texture, and a 128 bit 2D accelerator with 1T pipeline BITBLT engine. It also features a Video Accelerator and advanced hardware acceleration logic to deliver high quality DVD playback. A Dual 12 bit DDR digital video link interfaced to SiS 301B Video Bridge packaged in 100-pin PQFP is incorporated to expand the SiS 650 functionality to support the secondary display, in addition to the default primary CRT display. The SiS 301B Video Bridge integrates an NTSL/PAL video encoder with Macro Vision Ver. 7.1.L1 option for TV display, a TMDS transmitter with Bi-linear scaling capability for TFT LCD panel support, and an analog RGB port to support a secondary CRT. The primary CRT display and the extended secondary display (TV, TFT LCD Panel, 2'nd CRT) features the Dual View Capability in the sense that both can generate the display in independent resolutions, color depths, and frame rates.

Two separate buses, Host-t-GUI in the width of 64 bit, and GUI-t-Memory Controller in the width of 128 bit are devised to ensure concurrency of Host-t-GUI streaming, and GUI-t-MC streaming. In PC133, or DDR266 memory subsystem, the 128 bit GUI-t-MC bus will attain the AGP4X or AGP 8X equivalent texture transfer rate, respectively. The Memory Controller mainly comprises the Memory Arbiter, the M-data/M-Command Queues, and the Memory Interface. The Memory Arbiter arbitrates a plenty of memory access requests from the GUI or AGP controller, Host Controller, and I/O bus masters based on a default optimized priority list with the capability of dynamically prioritizing the I/O bus master requests in a bid to offering privileged service to 1) the isochronous downstream transfer to guarantee the min. latency & timely delivery, or 2) the PCI master upstream transfer to curb the latency within the maximum tolerant period of 10us. Prior to the memory access requests pushed into the M-data queue, any command compliant to the paging mechanism is generated and pushed into the M-CMD queue. The M-data/M-CMD Queues further orders and forwards these queuing requests to the Memory Interface in an effort to utilizing the memory bandwidth to its utmost by scheduling the command requests in the background when the data requests streamlines in the foreground.

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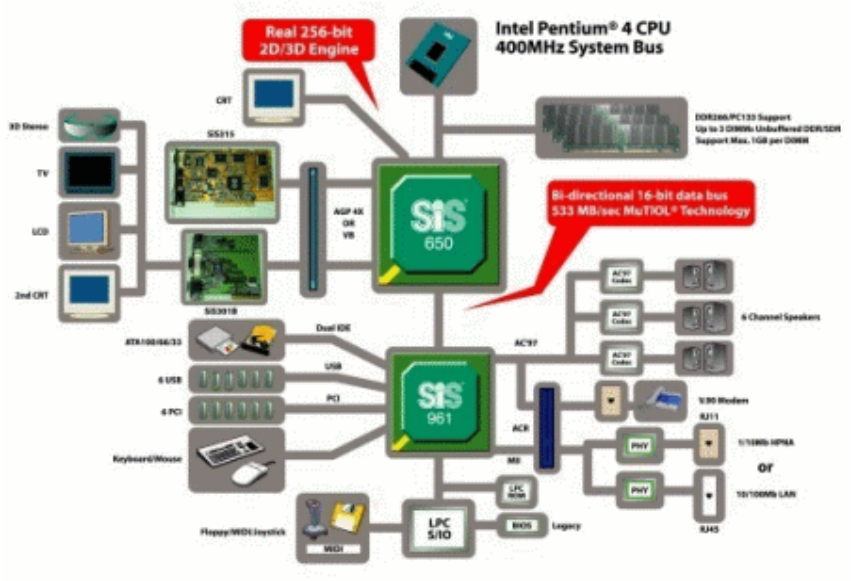
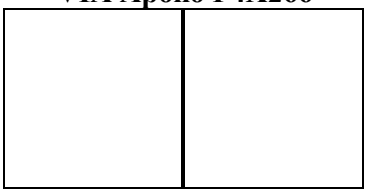
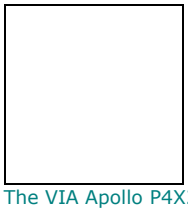


- **VIA Apollo P4X266**





The VIA Apollo P4X266 is the first chipset to harness the power of high bandwidth DDR SDRAM to provide the most balanced and cost effective platform for building the next generation of high performance Intel? Pentium? 4 processor based servers, workstations, and PC systems.

The VIA Apollo P4X266 is the most powerful, cost effective, and flexible chipset solution available for Intel? Pentium? 4 processor based platforms. Its ultra-fast 400MHz Front Side Bus combined with support for up to 4GB of high-speed DDR266 SDRAM fully exploit the processor's high bandwidth, yielding truly exceptional performance across the full range of applications while leveraging the cost benefits and reliability of SDRAM architecture. System responsiveness is further enhanced by the chipset's high speed V-Link bus, which doubles communication bandwidth between the North and South Bridge to 266MB per second.

The VIA Apollo P4X266 also supports PC133 SDRAM to provide the scalability that OEMs and System Integrators need to build systems spanning a complete spectrum of price points using a single platform. In addition to a host of performance features such as AGP4X and ATA 100 support, the P4X266 features an integrated 3Com 10/100Mb Ethernet Media Access Controller (MAC) in the VT8233C South Bridge to make it the optimum chipset for network ready desktop solutions. Additional features include integrated AC'97 audio, MC'97 modem support, 6 USB ports, and Advanced Power Management

Features	VIA P4X266	Intel 850
North Bridge	VT8753	82850 MCH
Processor Support	Intel? Pentium? 4	Intel? Pentium? 4
CPU Front Side Bus	400MHz	400MHz
AGP4X support	Y	Y
Memory Bus Settings	200/266 MHz @ 64 bit	Dual Channel 600/800MHz @ 16 bit
Max. Memory	4.0GB	2.0GB
Memory Type	DDR 200/266 or PC100/133 SDRAM	RDRAM
South Bridge	VT8233/8233C	82801BA ICH2
ACR Support	Y	N
Integrated Audio	AC'97 2.2 compliant	AC'97 2.1 compliant
Integrated Modem	MC'97	MC'97
Integrated Network controller	VIA or 3Com Ethernet MAC 10/100Mb Ethernet 1/10Mb HomePNA	10/100Mb Ethernet
PCI Devices/Slots	Integrated PCI support5 PCI Slots	Integrated PCI support 5 PCI slots
North/South Bridge Link	VIA V-Link @ 266 MB/sec	Intel Hub Architecture @ 266 MB/sec
IDE	ATA 33/66/100	ATA 33/66/100
USB	6 x USB ports with 3 controllers	4 x USB ports with 2 controllers
Super IO	LPC Super I/O	LPC Super I/O
IO APIC	Y	Y
Power Management	ACPI/APM/PCI/PM	ACPI/APM/PCI/PM

Features

- Supports Intel? Pentium? 4 Processor
- 400MHz (Quad 100) FSB setting
- AGP4X graphics
- Supports DDR200/266 SDRAM as well as PC100/133 SDRAM

- Ultra fast 266MB per second V-Link between North and South Bridge
- Support for Advanced Communications Riser (ACR)
- AC'97 and MC'97 Audio/Modem
- Integrated 3Com 10/100Mb Ethernet Media Access Controller (VT8233C) or 10/100Mb Ethernet, 1/10Mb HomePNA (VT8233)
- Support for 2 ATA 33/66/100 interfaces
- 6 USB ports, UHCI compliant
- Integrated KBC, PS/2 Mouse Interface, RTC
- Advanced power management capabilities
- 664-pin BGA VT8753 North Bridge
- 376-pin BGA VT8233C or VT8233 South Bridge

Benefits

Ultra High Performance Platform
The VIA Apollo P4X266 is the most cohesive, powerful chipset platform for the Intel Pentium? 4 processor with support for up to 4GB of high speed, power efficient DDR SDRAM with 64 bit 266MHz memory bus, ultra fast 400MHz Front Side Bus, and 266MB per second V-link hub architecture connecting the North and South Bridge.

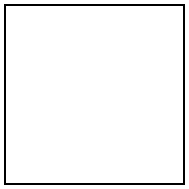
Flexible and Cost Efficient
The VIA Apollo P4X266 has flexibility built in, with support for DDR266 SDRAM, PC133 and PC100 SDRAM, enabling system builders to choose the specification that best fits their desired functionality and target price points, while taking advantage of the cost and reliability benefits of SDRAM infrastructure.

Power Efficient and Innovative
DDR266 lowers memory power consumption to 2.5 volts, balancing the power hungry processor, while features like the integrated 3Com 10/100 Mb Ethernet Media Access Controller add value in an innovative, cost effective form.

VIA Stability and Reliability
VIA Apollo chipsets benefit from the most advanced design, manufacturing and testing processes yielding the industry's most reliable and stable system platforms.

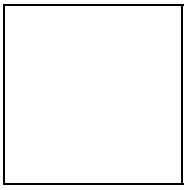
VPX-64 64bit/66MHz PCI Controller

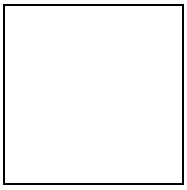
The VPX-64 64bit PCI Controller (model number VT8101) is a companion chip that allows existing VIA chipsets to support high-bandwidth 64bit PCI in both 33MHz and 66MHz modes. VPX-64 enables VIA Apollo chipsets to offer up to 533MB/s of PCI bandwidth for high end peripherals like Gigabit Ethernet, Fibre Channel and Ultra SCSI/320 and is perfect for implementation in server systems based on the VIA Apollo P4X266. VPX-64 also supports up to six traditional 32bit/33MHz PCI devices, allowing VPX-64 equipped system designs to support no less than 10 PCI devices, and up to 12 in total. VPX-64 is available in a 27x27mm, 265 pin PGA package. VPX-64 interfaces directly to the dual mode AGP/XIP port present in existing V-MAP compatible chipsets. To find out more download the VPX Whitepaper



Block Diagram

- **VIA P4X400**





Fusing the unequalled bandwidth of AGP 8X with the Intel® Pentium® 4 processor, the VIA Apollo P4X400 with 533MHz processor bus, DDR333 , ATA-133, USB 2.0 and 8X V-Link chip interconnect, is a new paradigm in total system performance

Building on the success of the VIA Apollo P4X266, the first DDR266 SDRAM chipset for the Intel® Pentium® 4 processor, the VIA Apollo P4X400 is the most feature rich and powerful chipset ever produced. DDR333 memory support, offering 20% more memory bandwidth to the CPU, and the ultra fast 400/533MHz processor bus unleash the full power of today's and tomorrow's Intel® Pentium® 4 processors, enabling stunning performance across the full spectrum of applications.
In addition, the VIA Apollo P4X400 supports the very latest I/O technologies including AGP 8X deriving maximum performance from the most powerful graphics cards, and new 8X V-link chip interconnect with 533MB/s of bandwidth between North and South Bridge enabling the processor to exploit the full potential of peripheral devices.
The new VT8235 South Bridge also features first to market innovations including support for 6 USB 2.0 ports for peripheral connectivity 40 times faster than USB 1.1, and ATA-133 support, the fastest IDE interface available, making total system performance a reality. Additional features include integrated into the South Bridge include VIA MAC for 10/100Mbps Ethernet, integrated PCI support, 6 Channel Surround Sound AC-97 audio and MC-97 modem.

Features	P4X400	P4X266A	P4X266
North Bridge	VT8754	VT8753A	VT8753
Processor Support	Intel® Pentium® 4	Intel® Pentium® 4	Intel® Pentium® 4
Front Side Bus	400/533MHz	400MHz	400MHz
Memory Bus	200/266/333/ 400MHz	200/266MHz	200/266MHz
AGP Support	AGP 8X	AGP 4X	AGP 4X
Memory Type	DDR200/266/333 SDRAM	DDR200/266 PC100/133 SDRAM	DDR200/266 PC100/ 133 SDRAM
Max. Memory	32.0GB	4.0GB	4.0GB
South Bridge	VT8235	VT8233, VT8233C or VT8233A	VT8233, VT8233C or VT8233A
North/South Bridge Link	VIA V-Link@ 533MB/s	VIA V-Link@ 266MB/s	VIA V-Link@ 266MB/s
Integrated Audio	AC?97 6 Channel	AC?97 6 Channel	AC?97 6 Channel
Integrated Modem	MC?97	MC?97	MC?97
Integrated Network Controller	VIA 10/100 Ethernet MAC	3Com? (VT8233C) or? VIA (VT8233 or 8233A) 10/100 Ethernet MAC	3Com? (VT8233C) or? VIA (VT8233 or 8233A) 10/100 Ethernet MAC
PCI Devices/ Slots	5 PCI	5 PCI	5 PCI
IDE	ATA 33/66/100/ 133	ATA 33/66/100 ATA 133 with VT8233A South Bridge	ATA 33/66/100 ATA 133 with VT8233A South Bridge
USB	USB 2.0 6 Ports, 3 Controllers	USB 1.1 6 Ports, 3 Controllers	USB 1.1 6 Ports, 3 Controllers

Super I/O	**LPC Super I/O**	**LPC Super I/O**	**LPC Super I/O**
IO APIC	**Yes**	**Yes**	**Yes**
Power Management	**ACPI/APM/PCI/ PM**	**ACPI/APM/PCI/ PM**	**ACPI/APM/PCI/PM**

Features

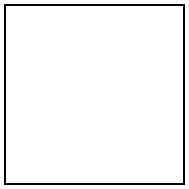
· Supports Intel® Pentium® 4 processors
· 400/533MHz FSB settings
· Support for AGP 2X/4X/8X
· Supports up to 3.0GB DDR200/266/333 SDRAM
· 8X V-Link 533MB/s high bandwidth North/South Bridge interconnect
· Support for Advanced Communications Riser (ACR) Card Standard
· Integrated 6 channel Surround Sound AC-97 Audio
· Integrated MC-97 Modem
· Integrated 10/100 Ethernet MAC
· Support for ATA 33/66/100/133
· Support for USB 2.0, 6 USB ports, UHCI compliant
· Advanced power management capabilities including ACPI/OnNow
· 664-pin BGA VT8754 North Bridge
· 487-pin BGA VT8235 South Bridge

Benefits

Ultra Powerful Performance
The VIA Apollo P4X400 features the world's fastest single channel memory controller, designed for exceptionally high performance. With a 400MHz/533MHz processor bus and supporting DDR200/266/333 memory, the VIA Apollo P4X400 provides lightning fast access to system memory and can reach a peak bandwidth of 2.7 GB/sec, 20% greater than the P4X266A, enabling the full performance potential of the fastest Intel® Pentium® 4 processors to be harnessed.

Ultimate Connectivity
The VT8235 South Bridge with 8X V-link, USB 2.0 and ATA-133 provides the most advanced connectivity features to ensure the ultra fast processor and memory are not restricted by peripheral bottlenecks. USB 2.0 and ATA-133 high-speed transfer technologies are essential for today's bandwidth-hungry peripherals, and greatly enhance the performance of demanding applications including interactive gaming and digital photography.

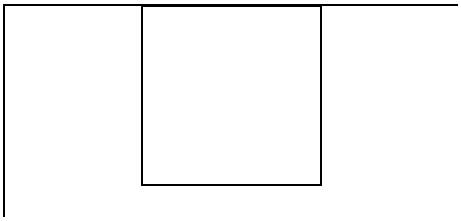
VIA Stability and Reliability
VIA Chipset Platforms offer a balance of reliability and flexibility derived from using proven, modular components and evolutionary design principles, enabling the VIA Apollo P4X400 to share the best characteristics of award winning previous generation products like the VIA Apollo P4X266A.



Block Diagram

- **Mātesplates piemērs: Shuttle AV49(N)**

Спецификация:



Поддерживаемые процессоры: Socket 478
Intel Pentium 4 / Celeron в 478 контактном корпусе

Чипсет

(Северный мост) VIA P4X400
Поддержка системной шины процессора Pentium 4 с частотой 400/533МГц
Поддержка интерфейса памяти DDR 200 / 266 / 333 / 400 SDRAM
Поддержка интерфейса AGP 3.0
Поддержка V-Link интерфейса к схеме VT8235
Поддержка стандарта управления питанием ACPI 1.0b
Поддержка стандарта управления питанием APM 1.2

(Южный мост) VIA VT8235
Встроенный высокочастотный (533МБ/с) 8-битный V-link контроллер
Интегрированный контроллер ЛВС (Fast Ethernet)
Интегрированный USB2.0 контроллер (три root hub) на шесть портов
Интегрированный двух канальный контроллер UDMA 33/66/100/133 режим мастер EIDE
LPC интерфейс для Low Pin Count к Super-I/O или ROM
Интегрированный контроллер клавиатуры с поддержкой мыши на PS2
Встроенные часы реального времени (DS12885-style) с расширенным размещением (256 байт в CMOS RAM) и предупреждением День/Месяц для ACPI
Интерфейс управления системной шиной
Сложное PC99-совместимое мобильное управление питанием
Интегрированный Plug and Play контроллер

Форм фактор
ATX

Память: 3 модуля 184 контактной DDR SDRAM

Поддержка PC1600/2100/2700 DDR SDRAM объемом до 3ГБ (не буферизированная)
Поддержка PC1600/2100/2700/3200 DDR SDRAM объемом до 3ГБ (регистровая)

Аппаратное аудио: 6-ти канальное Realtek ALC650

18-битное аналого-цифровое и цифро-аналоговое преобразование
Соответствует спецификации AC'97 2.2
6 канальный разъем выхода цифро-аналогового преобразователя для многоканальных приложений 3D стерео
Цифровой S/PDIF выход
Цифровой S/PDIF вход

Слоты расширения:

1 слот AGP 3.0
Поддержка внешних VGA устройств соответствующих AGP V2.0 / 3.0
Поддержка скорости передачи данных 2X, 4X, 8X AGP
Поддержка внешних AGP устройств с напряжением 1.5V
Встроенный ключ (AGP-proof) защиты от электрического повреждения AGP видео картами с напряжением 3.3V

5 слотов PCI:
Соответствует PCI 2.2, 32-битные BUS мастер слоты
Пропускная способность до 133 МБайт / сек

IDE интерфейс: на схеме VT8235

2 канала UltraDMA/100 Bus мастер IDE от схемы VT8235
80-жильный кабель для ATAPI устройств
Поддержка ATAPI IDE CD-ROM, CD-R, CD-RW, и LS-120

Интерфейс USB 2.0: на схеме VT8235

Соответствует спецификации Universal Serial Bus Bep. 2.0
Соответствует спецификации Enhanced Host Controller Interface для USB
Высоко эффективный контроллер USB 2.0 с интегрированным USB 2.0 приемопередатчиком, поддерживает передачу сигналов с высокой, средней и низкой скоростью

Fast Ethernet(только на плате AV49N):

На плате размещен сетевой контроллер Realtek 8201 PHYceiver
Высокопроизводительный интерфейс PCI мастер с объединением / разъединением и возможностью дробления
Стандартный MII интерфейс к внешнему PHYceiver
1/10/100 МГц дуплексные и полудуплексные операции
Независимый стек FIFO на 2 Кбайта для получаемых и передаваемых сообщений

Гибкий, динамически загружаемый EEPROM алгоритм
Фильтрация адресов (Physical,Broadcast,Multicast) с использованием хеширования
Волшебный пакет (Magic packet) и фильтрация включения от адресов
Программно-управляемый сброс питания
LPC I/O:ITE 8705F

Соответствует спецификации Intel Low Pin Count Interface вер. 1.0
Соответствует ACPI V. 1.0
Встроенный аппаратный мониторинг

Два 16C550 UART
Поддержка двух стандартных последовательных портов
Поддерживает протоколы IrDA 1.0/ASKIR
Поддерживает протоколы чтения смарт-карт

Встроенный контроллер чтения смарт-карт

IEEE 1284 параллельный порт
Стандартный режим соответствует - Bi-directional SPP
Расширенный режим соответствует - EPP V. 1.7 и V. 1.9
Высоко скоростной режим соответствует - ECP, IEEE 1284

Контроллер флоппи дисководов
Поддерживает 2 устройства для флоппи емкостью 360K/ 720K/ 1.2M/ 1.44M/ 2.88M
Улучшенный цифровой фильтр данных
Поддержка устройств режима 3-Mode

Игровой порт
Специализированный MIDI интерфейс
Поддерживает различные режимы восстановления после пропадания питания и режим игнорирования нажатия кнопки выключения

Аппаратный мониторинг: Встроен в ITE 8705F
2 входа от выносных терморезисторов для контроля температуры системы
1 вход от термодиода для контроля температуры микропроцессора
контроль 8 напряжений питания
1 вход датчика открывания корпуса
Контроль скорости вращения 3 вентиляторов
Интеллектуальный контроллер (Smart Guardian Controlle) для обеспечения программного управления скоростью вращения вентилятора

Управление электропитанием
Соответствует APM 1.2
Соответствует ACPI 1.0
Поддерживаются различные режимы энергосбережения, такие как сохранение системной информации в памяти (suspend to DRAM), сохранение системной информации на диске (suspend to disk) и автоматическое включение по сигналу от любого устройства

Bios: Award PnP BIOS
Хранится в 2 МБ флэш памяти
DMI 2.3
Установка FSB 100/133 МГц
Поддержка ручного распределения таблицы прерываний
Загрузка системы с Floppy, ATAPI устройств, USB устройств, SCSI устройств
На плате размещены Порты / Коннекторы / Переключатели / Разъемы(передняя/задняя панели)
Задняя панель:
2 последовательных порта
1 параллельный порт (SPP, EPP, ECP)
1 порт клавиатуры PS/2
1 порт для мыши PS/2
1 сетевой порт (только на AV49N)
6 портов USB 1.1/2.0
1 игровой / MIDI порт
1 линейный вход, 1 линейный выход, 1 вход для микрофона

Коннекторы:
1 ATX разъем питания
1 4-х жильный 12V ATX разъем питания
1 6-ти жильный 5V / 3.3V ATX разъем питания
4 разъема для подключения вентиляторов
2 разъема UltraDMA100/133 Bus Master IDE

1 разъем для FDD

Переключатели:
Стирание информации в CMOS (Clear CMOS)
аппаратная защита записи загрузочного блока BIOS (Boot ROM protection)
питание USB основное/резервное (5V/5Vstb)
Разъемы:
2 10-конт. (2x5) разъема USB2.0 на передней панели
1 входной разъем Mini CD Audio
1 входной разъем TAD (звук от голосовых модемов)
1 входной разъем CD Audio
Вход/выход SPDIF
SIR (Инфракрасный)
Разъем включения от сети
Другие функции:
переключатель для перехода в режим энергосбережения (Suspend switch) и индикатор режима энергосбережения (Suspend LED)

Прилагаются: (CD-ROM диск)
Драйверы VIA 4 в 1
VIA USB2.0 драйвер
Realtek аудио драйвер
Realtek аудио утилита
ITE Smart Guardian утилита
VIA LAN драйвер
Руководство пользователя в PDF формате

IDE кабели:
1 кабель ATA 133/100/66

Кабели для дисководов:
1 кабель для FDD

USB кабели:
1 USB 2.0 кабель со скобкой для внешнего порта

Руководство пользователя:
1 печатное руководство пользователя

Радиатор чипсета, теплопроводящая паста для процессора и AGP

Socket A

Mātesplates ar Socket A centrālā procesora (CPU) spraudni var izmantot sekojošie procesori: AMD Duron, Athlon, Athlon XP un Athlon MP. Tās ir vidējas un vidēji augstas veiktspējas datoru pamatā.

Uz doto momentu populārākajām mātesplatēm (MB) ar Socket A spraudni par pamatu kalpo sekojoši sistēmu kontrolieri:

- AMD 760 kopa (AMD-761 kopā ar AMD-766)
- AMD 760MP kopa (AMD-762 kopā ar AMD-766 – divu procesoru sistēmai)
- AMD 760MPX kopa (AMD-762 kopā ar AMD-768 – divu procesoru sistēmai)
- SiS (SiS730S, SiS735, SiS745, SiS746)
- VIA Technologies 133 sērija (KT133, KT133A, KM133, KL133, KL133A, KM133, KM133A, KTE133, KLE133)
- VIA Technologies 266 sērija (KN266, KT266A, KT266)
- VIA Technologies KT333
- VIA Technologies KT400

- **AMD-760™**

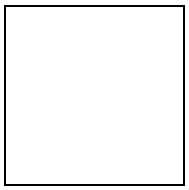
AMD-760™ Chipset Overview

The AMD Athlon™ processor powers the next generation of computing platforms, delivering the ultimate performance for cutting-edge applications and an unprecedented computing experience.

The AMD-760™ chipset is a highly integrated system logic solution that delivers enhanced performance for the AMDAthlon processor and other AMD Athlon system bus-compatible processors. The AMD-760 chipset consists of the AMD-761™ system controller in a 569-pin plastic ball-grid array (PBGA) package and the AMD-766™ peripheral bus controller in a 272-pin PBGA package.

The AMD-761 system controller features the AMD Athlon system bus, DDR-SDRAM system memory controller, accelerated graphics port (AGP4X) controller, and peripheral component interconnect (PCI) bus controller.

The AMD-766 peripheral bus controller features four primary blocks (PCI-to-ISA/LPC bridge, OHCI USB host controller, EIDE UDMA-33/66/100 controller, and system management logic), each with independent access to the PCI bus, a complete set of PCI interface signals and state machines, and the capability of working independently with separate devices.



- **AMD-760™ MP**

The AMD-760™ MP Chipset Product Overview

The AMD-760™ MP chipset is a high performance two-way multiprocessor core logic solution for the AMD Athlon™ MP class processors. The high-performance of the chipset is attributed to an enhanced AMD Athlon™ system bus, support for DDR (Double Data Rate) memory technology, and AGP-4X graphics interface. Together with other sophisticated core logic in memory and I/O control, system and power management, the AMD-760MP chipset provides a powerful solution for server and workstation platforms.

The AMD-760MP chipset consists of the following components.

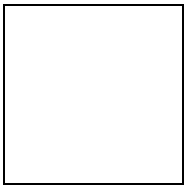
- AMD-762™ system controller (Northbridge)
- AMD-766™ peripheral bus controller (Southbridge)

Key Features

- Dual point-to-point, high-speed 266MHz [1] AMD Athlon™ system bus (supporting up to two processors)
- PC2100[2] DDR (Double Data Rate) memory subsystem (supporting up to 4 GB of memory space)
- AGP-4X Graphics Interface (supports 1X and 2X modes)
- PCI 2.2 Compliant 33 MHz - 32/64-bit PCI Bus Interface
- Two-channel EIDE Interface supporting ATA 33/66/100 modes
- LPC bus
- Flash memory/GPIO Interface

- USB OHCI host controller supporting four ports
- SM-Bus
- IOAPIC support
- Serial IRQ support
- Power management support

These features combine to deliver unprecedented performance to platforms implementing AMD processor technology.



AMD-762™ System Controller
The AMD-762™ System Controller provides the bridging function between the high-speed host-processor buses, AGP Graphics subsystem, DDR memory subsystem, and the PCI interface.

AMD-762™ System Controller Key Features

- Two 266 MHz point-to-point AMD Athlon system buses, providing uni-processor or 2-way Symmetric Multiprocessor capability
- PC2100 DDR (Double Data Rate) Memory Controller with support for up to 4 GB of memory space (supports four Registered DIMM slots)
- AGP-4X Interface (supporting 1X and 2X modes)
- Dual Mode PCI 2.2 Compliant PCI Bus Interface
    - 33 MHz clock with 32-bit and 64-bit data path support. (Supports up to seven PCI devices [3])
    - 66 MHz clock with 32-bit and 64-bit data path support. (Supports up to two PCI slots)
- 949-pin Ceramic Column Grid Array (CCGA) package
- 2.5 V Core

The AMD-762 system controller also supports the 66 MHz/32-bit/64-bit PCI bus mode [4] . In this mode, the AMD-762 system controller supports only two 66-MHz PCI bus slots. For designs requiring both 66 MHz and 33 MHz PCI capability, compatible Southbridge components implementing PCI-to-PCI bridging can be used to provide 33 MHz bus expansion.

AMD-766™ Peripheral Bus Controller
The AMD-766™ peripheral bus controller integrates the I/O subsystems - allowing communication to peripheral devices.

AMD-766™ Peripheral Bus Controller Key Features

- PCI 2.2 compliant 33 MHz/32-bit PCI Bus Interface
- LPC (Low Pin Count) bus interface (Includes an 8237-based register set for DMA)
- GPIO/Flash Interface: 8 bits wide; support for Flash BIOS and attachment of General Purpose I/O Devices (for example, buttons and switches)
- UDMA 33/66/100 compatible EIDE bus master controller
    - Support for a primary and a secondary dual-drive port
    - Supports PIO modes 1-4

    - ATAPI
    - Two separate FIFOs for DMA accesses and read prefetch and write buffers for PIO accesses
- OHCI-based USB host controller (Includes a root hub and support for four ports)
- Extensive ACPI-compliant power management logic
    - Programmable C2, C3, and Power-On-Suspend states, Suspend-to-RAM,Suspend to disk and soft off states
    - Throttling
    - Hardware traps
    - System inactivity timer
- System management logic, including Total Cost of Ownership (TCO) registers
- Privacy/security logic, including ROM access control
- 32 pins multiplexed with General Purpose IO (GPIO) functionality
- AT-compatible Interrupt Controller (8259-based)
- Programmable interval timer (8254-based)
- Real-Time Clock (RTC)
    - 256 bytes of CMOS RAM
    - Battery-powered RAM
    - ACPI-compliant extensions
- Register-compatible I/O APIC (82093)
- Legacy AT logic (including Port 61h logic, Gate A20 logic, Port 92h logic, etc)
- Full SM-Bus implementation
- 272-pin BGA Package
- 3.3-volt core and output drivers; 5-V tolerant input buffers

[1] The 266 MHz speed represents a 133 MHz Clock signal, with data transfers on both clock edges. This produces a (133 MHz clock) x (2 data transfers/clock) = 266M transfers/sec = 266-MHz data rate.

[2] PC2100 represents DDR memory DIMMS that provide data rates of 2100 MB/s, calculated as (133-MHz clock) x (2 data transfers/clock) x (8 Bytes/transfer) = 2100 MB/s.

[3] The AMD-762™ system controller provides eight PCI Bus REQ/GNT# signal pairs.

- One pair dedicated to the Southbridge (SBREQ, SBGNT#)
- 7 pairs dedicated to other PCI devices (REQ[6:0], GNT[6:0]#)

From a bus loading and signal integrity perspective, AMD designs and tests its AMD-762 system controller-based reference design platforms to accommodate five PCI bus slots (33-MHz mode). Neglecting the Southbridge, this configuration leaves two REQ/GNT# signal pairs available for additional motherboard PCI slots and devices (for example, SCSI components, Network Interface Components, etc). It is up to the system designer to perform the necessary analysis and testing to determine if additional slots and devices can be supported.

[4] This mode is not supported when the AMD-762 System Controller is used in conjunction with the AMD-766™ Peripheral Bus Controller. This mode can only be used when the Northbridge is interfaced to a PCI

66 MHz capable Southbridge that is compatible to the AMD-762 System Controller.

- **AMD-760™ MPX**

The AMD-760™ MPX Chipset Product Overview

Overview

The AMD-760™ MPX chipset is a high performance two-way multiprocessor core logic solution for AMD AthlonTM MP class processors, offering Multi-Processor eXtended (MPX) performance over the AMD-760 MP chipset. Extended performance is offered by the 66 MHz/64-bit/32-bit PCI bus and a feature-rich peripheral bus controller offering PCI-to-PCI bridging capability along with AC '97 audio. The high-performance of the chipset is attributed to an enhanced AMD Athlon system bus, support for DDR (Double Data Rate) memory technology, and AGP-4X Graphics Interface.

The AMD-760 MPX chipset consists of the following components:

- AMD-762™ System Controller (Northbridge)
- AMD-768™ Peripheral Bus Controller (Southbridge)

Together, these components provide a powerful solution for Workstation and Server class platforms.

Key features of the chipset are as follows:

- Dual high-speed 266 MHz[1] AMD Athlon system buses, supporting up to two processors
- PC2100[2] DDR memory subsystem supporting up to 4 GB of memory
- AGP-4X Graphics Interface (supports 1X and 2X modes
- Primary PCI 2.2 compliant 66-MHz/64-bit/32-bit PCI Bus
- Secondary PCI 2.2 compliant 33-MHz/32-bit PCI Bus
- Two-channel ATA 33/66/100 support
- LPC bus
- Thirty-two general-purpose IO (GPIO) pins
- USB OHCI host controller supporting four ports
- SM-Bus
- IOAPIC support
- Serial IRQ support
- Power Management support
- AC '97 Audio support

These features combine to deliver unprecedented performance to platforms implementing AMD processor technology. [1]The 266-MHz speed represents a 133-MHz clock signal with data transfers on both clock edges. This is calculated as (a 133-MHz clock) x (2 data transfers/clock) = 266 M transfers/sec = 266-MHz data rate.
[2]PC2100 represents DDR memory DIMMS that provide data rates of 2100 MB/sec. This is calculated as (a 133-MHz clock) x (2 data transfers/clock) x (8 Bytes/transfer) ≈ 2100 MB/sec.

Figure 1 shows the system architecture of the AMD-760 MPX chipset.

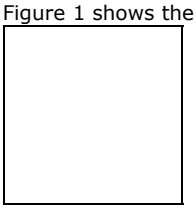


Figure 1. AMD-760™ MPX Chipset High-Level System Architecture

AMD-762™ System Controller

The AMD-762 system controller provides the bridging function between the high-speed host-processor buses, AGP graphics subsystem, DDR memory subsystem, and the PCI interface.

Key features of the AMD-762 system controller are as follows:

- Two 266 MHz point-to-point AMD system buses, providing uniprocessor or two-way symmetric multiprocessor capability
- PC2100 DDR (Double Data Rate) Memory Controller with support for up to 4 GB of memory space (supports four Registered DIMM slots)
- AGP-4X Interface (supporting 1X and 2X modes)
- Dual Mode PCI 2.2-Compliant PCI Bus Interface
    - 66-MHz clock with 32-bit and 64-bit data path support (supports up to two PCI slots[3])
    - 33-MHz clock with 32-bit and 64-bit data path support (supports up to seven PCI devices [4])
- A 949-pin Ceramic Column Grid Array (CCGA) package
- 2.5 V Core

[3] The 66-MHz PCI bus mode is supported only with the AMD-768 peripheral bus controller.
[4]The 33-MHz PCI bus mode is supported only with the AMD-766 peripheral bus controller. For more details, refer to the AMD-760 MP Chipset Overview, order # 24229. **AMD-768™ Peripheral Bus Controller**

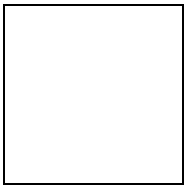
The AMD-768 peripheral bus controller is an Integrated Circuit (IC) that serves as the I/O hub, interface module, or Southbridge component of personal computer chipsets. The AMD-768 peripheral bus controller connects to a host memory controller through the PCI bus and provides a secondary PCI-bus bridge.

- Host (primary) PCI bus utilizing a 66MHz/32-bit interface (PCI 2.2 Compliant)
- Secondary 33MHz/32-bit PCI bus interface (PCI 2.2 Compliant), including PCI bus arbiter with support for up to eight external devices
- AC '97 Soft Audio Controller[5]
- UDMA 33/66/100 compatible EIDE bus master controller:
    - Support for a primary and a secondary dual-drive ports
    - Supports PIO modes 1–4
    - Multi-Word DMA
    - ATAPI
    - Two separate FIFOs for DMA accesses
- OHCI-based USB host
    - Includes a root hub and supports for four ports
    - Supports specification version 1.1
- Extensive ACPI-compliant Power Management logic:
    - Programmable C2, C3, Power-On-Suspend states

    - Suspend-to-RAM
    - Suspend-to-Disk
    - Soft Off states
    - Throttling
    - Device monitors
    - Hardware traps
    - System inactivity timer
- Privacy/security logic, including ROM access control
- Thirty-two General Purpose I/O (GPIO) pins (Many pins are multiplexed with other hard-wired functions.)
- Legacy-AT Compatible Logic:
    - Interrupt Controller (8259-based)
    - Programmable Interval Timer (8254-based)
    - DMA Controller (for LPC bus)
    - Legacy Ports
- Real-Time Clock (RTC):
    - 256 bytes of CMOS
    - Battery-powered RAM
    - ACPI-compliant extensions
- I/O APIC Controller
- Support for Distributed DMA and serial IRQ protocols
- SMBus controller with one SMBus port
- Random Number Generator
- A 492-pin BGA package; 26x26 BGA grid; 35x35 millimeters square
- Both 2.5-volt core and 3.3-volt output drivers; 5-volt tolerant input buffers

[5]The AMD-768 peripheral bus controller does not support AC'97 Soft Modem.

- **SiS746**



Product Overview

The SiS746 Host & Memory & AGP Controller integrates a high performance host interface for AMD Socket A processor, a high performance memory controller, a AGP interface, and SiS Mutiol® Technology connecting with SiS963 MuTIOL® Media IO. The SiS746 Host Interface features the S2K complaint bus driver technology to support AMD Polamino, Morgan, Athlon/XP, and Duron processors. It also supports the AMD PowerNow!? dynamic power management technique. The Memory Controller can support DDR and offer bandwidth up to 2.7GB/s under DDR333 in order to sustain the bandwidth demand from host processor, as well as the multi I/O masters and AGP masters. The memory controller also supports the Suspend-to-RAM function by retaining the CKE# pins asserted in ACPI S3 state in which only AUX source delivers power.

The AGP interface can support external AGP slot with AGP 2X/4X/8X capability and Fast Write Transactions. A high bandwidth and mature SiS MuTIOL® technology is incorporated to connect SiS746 and SiS963 MuTIOL® Media IO together. SiS MuTIOL® technology is developed into three layers, the Multi-Threaded I/O Link Layer delivering 1.2 GB/s bandwidth to connect embedded DMA Master devices and external PCI masters to interface to Multi-Threaded I/O Link Layer, the Multi-Threaded I/O Link Encoder/Decoder in SiS963 to transfer data w/ 1GB/s bandwidth from/to Multi-Threaded I/O Link Layer to/from SiS746, and the Multi-Threaded I/O Link Encoder/Decoder in SiS746 to transfer data w/ 1GB/s from/to memory sub-system to/from the Multi-Threaded I/O Link Encoder/Decoder in SiS963.

Key Feature

PC2001 Compliance

High Performance Host Interface

Supports AMD Socket A CPU: Palomino, Morgan, AthlonXP, & Duron
Synchronous/Asynchronous Host-t-DRAM Timing: 100/200, 133/200, 100/266, 133/266, 100/333, 133/333
S2K compliant bus driver with auto compensation capability
Supports AMD PowerNow!?dynamic power management function

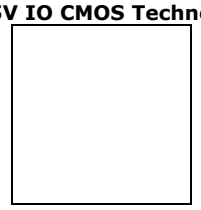
64 bit high performance DDR-266/333 Memory Controller

Supports 200/266/333 DDR SDRAM
3 Unbuffered DIMM of 2.5 volt DDR SDRAM
Supports up to 2 unbuffered DIMM DDR333 or up to 3 unbuffered double-sided DIMM DDR266/200
Up to 1 GB per DIMM with max. memory size up to 3 GB
Supports 16Mb, 64Mb, 128Mb, 256Mb, 512Mb SDRAM technology with page size from 2KB up to 16KB
Sustains DDR SDRAM CAS Latency at options of 2, 2.5, & 3 clocks
Programmable buffer strength optimizing performance and stability
Suspend to DRAM state
High performance unified memory controller optimizing the DRAM bus utilization

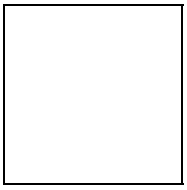
Integrated A.G.P. Compliant Target/66MHz Host-to-PCI Bridge

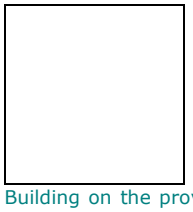
AGP v3.0 Compliant

Support AGP 8X/4X/2X Interface
High throughout MuTIOL® Connect interfaced to SiS963 MuTIOL® Media I/ O
Bi-directional 16 bit data bus
1 GB/s performance in 133MHz x 4 mode
Distributed arbitration strategy with enhanced mode of contiguous DMA data streaming
Packet based, pipelining, and split transaction scheme
Dedicated Isochronous Response Queue
Serves Isochronous downstream transfers responsive to the memory read requests originated from USB or audio/modem controllers
Offers privilege service to guarantee minimum latency & timely delivery
NAND Tree for Ball Connectivity Testing
713-Balls BGA Package
1.8V Core with Mixed 0.9V ~ 1.9V, 2.5V IO CMOS Technology



- **VIA KT266A**





Building on the proven power and reliability of the VIA Apollo KT266, the VIA Apollo KT266A further raises the performance bar AMD Athlon™ and AMD Duron™ processor based systems. The VIA Apollo KT266A is the first VIA chipset to feature Performance Driven Design, which includes tightened timings and deeper queues to greatly increase memory and system bus performance. Supporting DDR200/266 memory and a complete range of 200/266MHz Front Side Bus AMD Athlon™ and AMD Duron™ processors, the VIA Apollo KT266A provides lightning fast access to system memory and increased overall system performance.

Key Features

- Supports AMD Duron™ and Athlon™ Socket A processors
- 200/266MHz FSB settings
- Support for AGP 2X/4X
- Supports up to 4.0GB DDR200/266 SDRAM as well as PC100/133 SDRAM and Virtual Channel memory
- 266MB/sec high bandwidth North/South Bridge V-Link
- Support for Advanced Communications Riser (ACR) Card Standard
- Integrated 6 channel AC-97 Audio
- Integrated MC-97 Modem
- Integrated 10/100 BaseT Ethernet and 1/10Mb HomePNA controller
- Support for ATA 33/66/100
- 6 USB ports, UHCI compliant
- Advanced power management capabilities including ACPI/OnNow and AMD's PowerNow™
- 552-pin BGA VT8366A North Bridge
- 376-pin BGA VT8233 South Bridge

The VIA Apollo KT266A is part of the V-MAP family of chipsets, which provides pin compatibility across the full range of VIA DDR products. V-MAP, or VIA Modular Architecture Platform, allows motherboard manufacturers, OEMs, and System Integrators to serve different market segments with a single, unified platform design. The VIA Apollo KT266A (model number VT8366A) is completely pin-compatible the VIA Apollo KT266 (VT8366) to ensure rapid time to market. It can be paired with a choice of VT8233/VT8233C South Bridges, which are connected through the chipset's high bandwidth V-Link Hub Architecture. Other key features include AGP4X, ATA-100, and PC133 support, as well as integrated six channel advanced audio, six USB ports, LPC bus, and integrated 10/100Mbps Ethernet and Home PNA, AC-97 audio, MC-97 modem, and support for AMD's second generation PowerNow!™ technology.

Features & Benefits Summary

Features	Benefits
200/266MHz Memory Bus	An enhanced memory controller, designed with exceptionally high performance in mind. Supporting DDR200/266 memory, the VIA Apollo KT266A provides lightning fast access to system memory.
Flexible 200/266MHz Front Side Bus Settings	The VIA Apollo KT266A supports the AMD Athlon™/Duron™ S2K system bus, running at up to an effective 266MHz.

	Offering up to 2.1GB/s of bandwidth, the 266MHz system bus perfectly complements the high performance DDR memory subsystem and V-Link bus.
V-MAP	VIA Modular Architecture Platforms (V-MAP) allows flexibility when designing a system around the VIA Apollo KT266A chipset, enabling OEMs and System Integrators to reach different market segments with a single platform.
V-Link Hub Architecture	Dedicated 266MB/sec link between the North and South Bridge, doubling the bandwidth of the traditional PCI Bus.
AGP4X Interface	Ensures vivid 3D graphics and video performance.
ATA-100 Support	Enhances PC system responsiveness through high-speed HDD connections.
AC-97 Audio	Provides cost-effective solution for delivering high-quality audio capabilities.*
MC-97 Modem	Enables low-cost connectivity to the Internet through an ACR fax/modem module.
Support for Six USB Ports	Provides convenient Plug 'n' Play connections to the growing number of USB peripherals and enables Legacy Free system designs.

*Requires onboard audio Codec or ACR expansion slot on the motherboard.

Benefits of VIA Apollo KT266A

Performance Driven Design

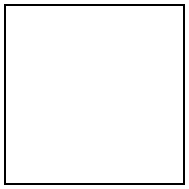
The VIA Apollo KT266A features an enhanced memory controller, designed with exceptionally high performance in mind. Supporting DDR200/266 memory, the VIA Apollo KT266A provides lightning fast access to system memory. Timings have been improved, resulting in faster transfers between the synchronized Front Side Bus and Memory Bus. Data queues have been deepened, allowing faster and more efficient access to buffered data. The end result is the industry's fastest DDR memory controller.

VIA Modular Architecture Platform

The VIA Apollo KT266A is part of the family of VIA Modular Architecture Platforms (V-MAP). As a modular solution, the North and South Bridge of the VIA Apollo KT266A are completely pin compatible with current and future products, such as the VT8233C South Bridge with integrated 3Com? Ethernet MAC. V-MAP allows flexibility when designing a system around the VIA Apollo KT266A chipset, enabling OEMs and System Integrators to reach different market segments with a single platform.

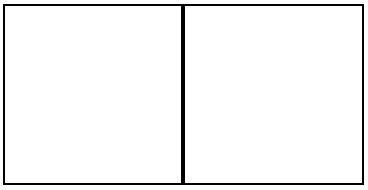
VIA Stability and Reliability

VIA Apollo chipsets benefit from the most advanced design, manufacturing and testing processes yielding the industry's most reliable and stable system platforms.



Block Diagram

- **VIA P4X333**



The VIA Apollo KT333

Building on the unprecedented power and reliability of the VIA Apollo KT266A, the VIA Apollo KT333 further raises the performance bar on AMD Athlon™ XP and AMD Duron™ processor based systems.

The VIA Apollo KT333 is the first VIA chipset to feature DDR333 memory offering 25% more memory bandwidth to the CPU. Supporting DDR200/266/333 memory and a complete range of 200/266/333MHz Front Side Bus AMD Athlon™ XP and AMD Duron™ processors, the VIA Apollo KT333 provides lightning fast access to the faster system memory enabling stunning performance across the full application range.

The VIA Apollo KT333 is part of the V-MAP family of chipsets, which provides pin compatibility across the full range of VIA DDR products. V-MAP, or VIA Modular Architecture Platform, allows motherboard manufacturers, OEMs, and System Integrators to serve different market segments with a single, unified platform design. This approach speeds time to market and ultimately reduces the price of V-MAP based mainboards. The VIA Apollo KT333 (model number VT8367) is completely pin-compatible the VIA Apollo KT266A (VT8366A) to ensure rapid time to market. It can be paired with a choice of VT8233/VT8233A/VT8233C South Bridges, which are connected through the chipset's high bandwidth V-Link Hub Architecture. Other key features include AGP4X, ATA-100 (ATA-133 in the VT8233A), integrated six channel advanced audio, six USB ports, LPC bus, and integrated 10/100Mbps Ethernet and Home PNA, AC-97 audio, and MC-97 modem.

Features & Benefits Summary

Feature	KT333	KT266A	SiS 735
North Bridge	VT8367	VT8366A	SIS735
Processor Support	AMD Athlon™ XP AMD Duron™	AMD Athlon™ XP AMD Duron™	AMD Athlon™ XP AMD Duron™
Front Side Bus	200/266/333MHz	200/266MHz	200/266MHz
Memory Bus	200/266/333MHz	200/266MHz	200/266MHz
AGP Support	AGP 4X	AGP 4X	AGP 4X
Memory Type	DDR200/266/333 SDRAM	DDR200/266 SDRAM	DDR200/266 SDRAM
Max. Memory	4.0GB	4.0GB	3.0GB
South Bridge	VT8233, VT8233C or VT8233A	VT8233, VT8233C or VT8233A	Integrated
North/South Bridge Link	VIA V-Link@ 266MB/s	VIA V-Link@ 266MB/s	SIS MuTIOL
Integrated Audio	AC?97 6 Channel	AC?97 6 Channel	AC?97 6 Channel
Integrated Modem	MC?97	MC?97	MC?97
Integrated Network Controller	3Com® (VT8233C) or VIA (VT8233 or 8233A) 10/100 Ethernet MAC	3Com® (VT8233C) or VIA (VT8233 or 8233A) 10/100 Ethernet MAC	SIS 10/100 Ethernet MAC
PCI Devices/Slots	5 PCI	5 PCI	6 PCI
IDE	ATA 33/66/100 ATA 133 with VT8233A South Bridge	ATA 33/66/100 ATA 133 with VT8233A South Bridge	ATA 33/66/100
USB	4 Ports, 2 Controllers	4 Ports, 2 Controllers	6 Ports, 3 Controllers
Super I/O	LPC Super I/O	LPC Super I/O	LPC Super I/O
IO APIC	Yes	Yes	Yes
Power Management	ACPI/APM/PCI/PM	ACPI/APM/PCI/PM	ACPI/APM/PCI/PM

Key Features

- Supports AMD Duron™ and Athlon™ Socket A processors
- 200/266/333MHz FSB settings
- Support for AGP 2X/4X
- Supports up to 4.0GB DDR200/266/333 SDRAM
- 266MB/sec high bandwidth North/South Bridge V-Link
- Support for Advanced Communications Riser (ACR) Card Standard
- Integrated 6 channel AC-97 Audio
- Integrated MC-97 Modem

- Integrated 10/100 BaseT Ethernet and 1/10Mb HomePNA controller
- Support for ATA 33/66/100
- 6 USB ports, UHCI compliant
- Advanced power management capabilities including ACPI/OnNow and AMD's PowerNow™
- 552-pin BGA VT8366A North Bridge
- 376-pin BGA VT8233 South Bridge

Benefits of VIA Apollo KT333

Ultra Powerful Performance

The VIA Apollo KT333 features the world's fastest single channel memory controller, designed for exceptionally high performance. Supporting DDR200/266/333 memory, the VIA Apollo KT333 provides lightning fast access to system memory and can reach a peak bandwidth of 2.7GB/sec, 25% greater than the KT266A, enabling the full performance potential of the fastest AMD Athlon™ XP processors to be harnessed.

ATA-133 IDE Interface

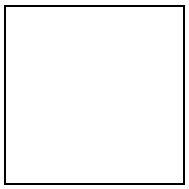
ATA-133 FastDrive™, integrated into the VT8233A South Bridge is the fastest IDE interface currently available and meets today's ever increasing data transfer requirements offering shorter access times and greater performance in a huge variety of everyday applications including audio, video & gaming.

V-MAP

The VIA Modular Architecture Platform offers a balance of reliability and flexibility. Reliability comes from using proven, modular components and evolutionary design principles in enabling the VIA Apollo KT333 to share the best characteristics of award winning previous generation products like the VIA Apollo KT266A. Flexibility comes from the North Bridge pin compatible with the KT266A and the industry's best choice of pin compatible VT8233 series South Bridge options enabling a variety of system configurations and price points based on the same mainboard design.

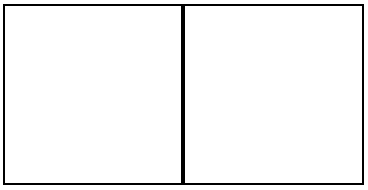
VIA Stability and Reliability

VIA Apollo chipsets benefit from the most advanced design, manufacturing and testing processes yielding the industry's most reliable and stable system platforms.



Block Diagram

- **VIA P4X400**



VIA Apollo KT400 takes the AMD Athlon™ XP processor to the summit of system performance with enhanced support for a DDR333 SDRAM, ultra fast AGP 8X graphics, ATA-133, USB 2.0 and an 8X V-Link chip interconnect

Building on the success of the VIA Apollo KT333, the market leading DDR333 SDRAM chipset for the AMD Athlon™ XP processor, the VIA Apollo KT400 boasts a complete set of today's cutting-edge features combined with VIA's ultra efficient memory controller technology, delivering unparalled system performance to Socket A compatible processors. Enhanced DDR333 memory support, offering 25% more memory bandwidth to the CPU than mainstream DDR266, and the fast 200/266/300MHz processor bus, unleash the full power of AMD Athlon™ XP processors, enabling stunning performance across the full spectrum of applications.
In addition, the VIA Apollo KT400 supports the very latest I/O technologies including AGP 8X deriving maximum performance from the most powerful graphics processors, and new 8X V-link chip interconnect with 533MB/s of bandwidth between North and South Bridge enabling the processor to exploit the full potential of peripheral devices.
The new VT8235 South Bridge also features a complete suite of networking and communication features including support for 6 USB 2.0 ports for peripheral connectivity 40 times faster than USB 1.1, and ATA-133 support, the fastest IDE interface available. Additional features include integrated into the South Bridge include VIA MAC for 10/100Mbps Ethernet, integrated PCI support, 6 Channel Surround Sound AC-97 audio and MC-97 modem.

Features	KT400	KT333	KT266A
North Bridge	VT8377	VT8367	VT8366A
Processor Support	AMD Athlon™ XP AMD Duron™	AMD Athlon™ XP AMD Duron™	AMD Athlon™ XP AMD Duron™
Front Side Bus	200/266/333MHz	200/266/333MHz	200/266MHz
Memory Bus	200/266/333MHz	200/266/333MHz	200/266MHz
AGP Support	AGP 8X	AGP 4X	AGP 4X
Memory Type	DDR200/266/333 SDRAM	DDR200/266/333 SDRAM	DDR200/266 SDRAM
Max. Memory	4.0GB	4.0GB	4.0GB
South Bridge	VT8235	VT8233, VT8233C, VT8233A or VT8235	VT8233, VT8233C or VT8233A
North/South Bridge Link	VIA V-Link@ 533MB/s	VIA V-Link@ 266MB/s	VIA V-Link@ 266MB/s
Integrated Audio	AC'97 6 Channel	AC'97 6 Channel	AC'97 6 Channel
Integrated Modem	MC'97	MC'97	MC'97
Integrated Network Controller	VIA 10/100 Ethernet MAC	3Com® (VT8233C) or VIA (VT8233 or 8233A) 10/100 Ethernet MAC	3Com® (VT8233C) or VIA (VT8233 or 8233A) 10/100 Ethernet MAC
PCI Devices/ Slots	5 PCI	5 PCI	5 PCI

IDE	**ATA 33/66/100/ 133**	**ATA 33/66/100 ATA 133 with VT8233A South Bridge**	**ATA 33/66/100 ATA 133 with VT8233A South Bridge**
USB	**USB 2.0 6 Ports, 3 Controllers**	**VT8233 series USB 1.1 6 Ports, 2 Controllers VT8235 USB 2.0 6 Ports, 3 Controllers**	**USB 1.1 6 Ports, 2 Controllers**
Super I/O	**LPC Super I/O**	**LPC Super I/O**	**LPC Super I/O**
IO APIC	**Yes**	**Yes**	**Yes**
Power Management	**ACPI/APM/PCI/ PM**	**ACPI/APM/PCI/ PM**	**ACPI/APM/PCI/PM**

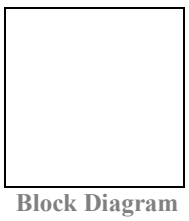
Key Features
· Supports AMD Athlon™ XP processors
· 200/266/333MHz FSB settings
· 200/266/333MHz System bus settings
· Support for AGP 2X/4X/8X
· Supports up to 4.0GB DDR200/266/333SDRAM
· 8X V-Link 533MB/s high bandwidth North/South Bridge interconnect
· Support for Advanced Communications Riser (ACR) Card Standard
· Integrated 6 channel Surround Sound AC-97 Audio
· Integrated MC-97 Modem
· Integrated 10/100 Ethernet MAC
· Support for ATA 33/66/100/133
· Support for USB 2.0, 6 USB ports, UHCI compliant
· Advanced power management capabilities including ACPI/OnNow
· 664-pin BGA VT8368 North Bridge
· 487-pin BGA VT8235 South Bridge

Benefits of VIA Apollo KT400
Unmatched Performance for the AMD Athlon™ XP processor
The VIA Apollo KT400 features the world's most efficient memory controller, designed for exceptionally high performance. With a 200/266MHz processor bus and supporting DDR200/266/333 memory, the VIA Apollo KT400 provides lightning fast access to system memory and can reach a peak bandwidth of 2.7GB/sec, 25% greater than the KT266A, enabling the full performance potential of the fastest AMD Athlon™ XP processors to be harnessed.

A Platform for Next Generation Graphics
The AGP 8X implementation in the VIA Apollo KT400 North Bridge offers 2.1GB/s of dedicated bandwidth to the next generation of discrete 3D graphics solutions offering end users easy upgradeability and ensuring there is enough performance headroom for a solid return on their motherboard investment.

Ultimate Connectivity
The VT8235 South Bridge with 8X V-link, USB 2.0 and ATA-133 provides the most advanced connectivity features to ensure the ultra fast processor and memory are not restricted by peripheral bottlenecks. USB 2.0 and ATA-133 high-speed transfer technologies are essential for today's bandwidth-hungry peripherals, and greatly enhance the performance of demanding applications including interactive gaming and digital photography.

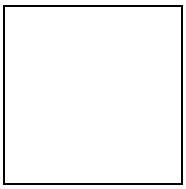
VIA Stability and Reliability
VIA Chipset Platforms offer a balance of reliability and flexibility derived from using proven, modular components and evolutionary design principles, enabling the VIA Apollo KT400 to share the best characteristics of award winning previous generation products like the VIA Apollo KT333.



Block Diagram

- **Mātesplates piemērs: Shuttle AK37GT/R**

Спецификация:



Поддержка процессоров: Socket A

Поддерживает процессоры
AMD Duron с частотой системной шины (FSB) 200 МГц
AMD Athion с частотой системной шины (FSB) 200/266 МГц
AMD Athion XP с частотой системной шины (FSB) 266 МГц

Чипсет VIA KT400:

(Северный мост) VIA KT400
Высокопроизводительный интерфейс процессора Athlon
Встроенный, полнофункциональный контроллер AGP
Встроенный высокочастотный (533МБ/С) контроллер 8-битной шины Vlink (межмостовая шина)
Встроенный усовершенствованный высокопроизводительный контроллер памяти DDR DRAM

(Южный мост) VIA VT8235
Встроенный высокочастотный (533МБ/С) контроллер 8-битной шины Vlink
Встроенный USB 2.0 контроллер с двумя концентраторами (root hub) и шестью портами
Встроенный двух канальный контроллер UDMA 33/66/100/133 режим мастер EIDE
Встроенный контроллер локальной сети (Fast Ethernet)
LPC интерфейс (Low Pin Count interface) к Super-I/O и BIOS
Встроенный контроллер клавиатуры и поддержка мыши PS2
Встроенные часы реального времени (стиль - DS12885) с увеличенным объемом хранения (256 байт CMOS RAM) и предупреждениями о смене дня/месяца для ACPI
Интерфейс системного управления шинами (System Management Bus Interface)
Усовершенствованное, соответствующее требованиям PC99 Mobile управление питанием
Встроенный контроллер Plug and Play

Форм-фактор:

ATX

Память: 4 модуля 184-контактной DIMM

Поддерживает 6 банков памяти PC1600/2100/2700/3200 объемом до 3 ГБ DRAMs (512Mb x8/x16 DRAM технология) для модулей не буферизированной DDR SDRAM

Поддерживает 8 банков памяти PC1600/2100/2700/3200 объемом до 4 ГБ DRAMs (512Мб x8/x16 DRAM технология) для модулей регистровой DDR SDRAM

Контроль четности (ECC) не поддерживается

Аудио:6 канальное аудио

На плате схема Realtek 650
Поддерживает режим 5.1 speakers (5 динамиков + сабвуфер)
Поддерживает цифровой S/PDIF вход/выход

USB контроллер: Встроен в VT8235

Встроенный USB контроллер с двумя концентраторами (root hub) и шестью портами
USB OHCI v.1.1/v.2.0 и соответствие спецификации Intel Universal HCI v.1.1
Поддержка до 6 портов

Слоты расширения:

1 слот AGP 2.0
Поддерживает устройства с напряжением питания AGP только 1.5V
Поддерживает передачу данных 2X,4X,8X AGP
Поддерживает режим SBA
Встроенный AGP-proof circuit для предотвращения электрического повреждения от 3.3V AGP карт

5 слотов PCI
Соответствует PCI 2.2, 32-битные слоты BUS Master
Максимальная производительность 133 Мбайт / сек

LPC I/O:ITE 8705F

Совместим со спецификацией Intel Low Pin Count Interface Specification Rev. 1.0
Соответствует ACPI V. 1.0
Встроенный аппаратный мониторинг

Два 16C550 UARTs
- Поддержка двух стандартных последовательных портов
- Поддержка протоколов инфракрасного порта IrDA/ASKIR
- Поддержка протоколов чтения смарт карт
Встроенная поддержка чтения смарт карт

Параллельный порт IEEE 1284
- Стандартный режим -- двунаправленный SPP
- Расширенный (Enhanced) режим -- соответствует EPP v.1.7 и v.1.9
- Высокоскоростной режим --соответствует ECP, IEEE 1284

Контроллер накопителя на гибких магнитных дисках(FDD)
-- Поддерживает два дисковода емкостью 360K/ 720K/ 1.2M/ 1.44M/ 2.88M
-- Улучшенный цифровой фильтр данных

-- Поддерживает режим Mode-3

Игровой порт
MIDI интерфейс
Поддерживает различные режимы восстановления после пропадания питания и режим игнорирования нажатия кнопки выключения

Локальная сеть:10/100 Fast Ethernet

Встроен в схему VT8235
На плате размещен SEEQ PHYceiver (соответствует интерфейсу MII)
Поддержка 1/10/100 МГц дуплексных и полудуплексных операций

IDE интерфейсНа плате схема High Point 372 (только на плате AK37GTR)
2 канала UltraDMA/133 Bus мастер IDE от схемы VT8235
2 канала UltraDMA/133 Bus мастер IDE от схемы High Point 372 с поддержкой функций RAID 0, RAID1, RAID0+1(только на AK37GTR)
80-жильный кабель для ATAPI устройств
Поддержка ATAPI IDE CD-ROM, CD-R, CD-RW и LS-120
Поддержка функций RAID 0, RAID1, RAID0+1 (только на плате AK35GTR)

Последовательный ATA интерфейс На плате схема Marvell 88i8030 мост последовательного ATA (Serial ATA bridge) (только на плате AK37GTR)
2 канала последовательного ATA от схемы High Point 372 с поддержкой RAID0, RAID1

Аппаратный мониторинг: Встроенная схема ITE 8705F
2 выносных терморезистора для контроля температуры системы
1 вход от термодиода для контроля температуры микропроцессора
контроль 8 напряжений питания
1 вход датчика открывания корпуса
Контроль скорости вращения 3 вентиляторов
Интеллектуальный контроллер (Smart Guardian Controlle) для обеспечения программного управления скоростью вращения вентилятора

Управление электропитанием
удовлетворяет APM 1.2
удовлетворяет ACPI 1.0
Поддерживаются различные режимы энергосбережения, такие как сохранение системной информации в памяти (suspend to DRAM), сохранение системной информации на диске (suspend to disk) без участия программных средств (soft-off) и автоматическое включение по сигналу от любого устройства
Сообщения о превышении температурных параметров (от датчиков)
Поддержка восстановления после пропадания питания
BIOS: Award PnP BIOS
Содержит 2 Мб флэш памяти
DMI 2.3
плавная подстройка FSB в диапазоне от 100МГц до 200МГц
Установка множителя процессора от 5 до 14
Поддерживается ручное распределение таблицы прерывание
Установка напряжения питания ядра процессора в диапазоне 1.05В-2.30В
Установка напряжения питания DDR в диапазоне 2.5В-3.0В
Установка напряжения питания AGP в диапазоне 1.5В-1.8В
На плате Порты / Коннекторы / Переключатели / Разъемы(передняя/задняя панели)
Порты:
Задняя панель:
2 последовательных порта
1 параллельный порт (SPP, EPP, ECP)
1 порт клавиатуры PS/2
1 порт для мыши PS/2
2 порта USB2.0
1 порт локальной сети
1 игровой / MIDI порт
1 линейный вход, 1 линейный выход, 1 вход для микрофона

Коннекторы:
1 ATX разъем питания
4 разъема для подключения вентиляторов (1 для вентилятора системного чипсета)
2 разъема UltraDMA/100/133 Bus Master IDE (4 разъема на AK37GTR)
2 разъема последовательного ATA (только на AK37GTR)
1 разъем для Floppy

Переключатели:
Стирание информации в CMOS (Clear CMOS)
Аппаратная защита записи загрузочного блока BIOS (Boot ROM protection)

Разъемы:
2 10-конт. (2x5) разъема USB 2.0 на передней панели
1 входной разъем CD Audio
1 вход/выход SPDIF
Вход от голосового модема (TAD in)
Вход mini CD audio
Прочие функции:
Переключатель для перехода в режим энергосбережения (Suspend switch) и индикатор режима энергосбережения

(Suspend LED)

Драйверы VIA 4 в 1
Драйвер VIA Ethternet
Драйвер High Point IDE (только для AK37GTR)
Драйвер Realtek Audio
Руководство пользователя в PDF формате

IDE кабели:
1 UDMA 66/100/133 кабель
1 UDMA 66/100/133 кабель(только для AK37GTR)
1 последовательный ATA кабель(только для AK37GTR)

Кабели для дисководов:
1 кабель для FDD

USB кабели:
1 USB кабель со скобкой для внешнего порта

Аудио кабели:
1 аудио кабель для центрального и басового выхода

Руководство пользователя:
1 печатное руководство пользователя
1 защитная панель ввода/вывода
1 радиатор для северного моста
теплопроводящая паста для AGP

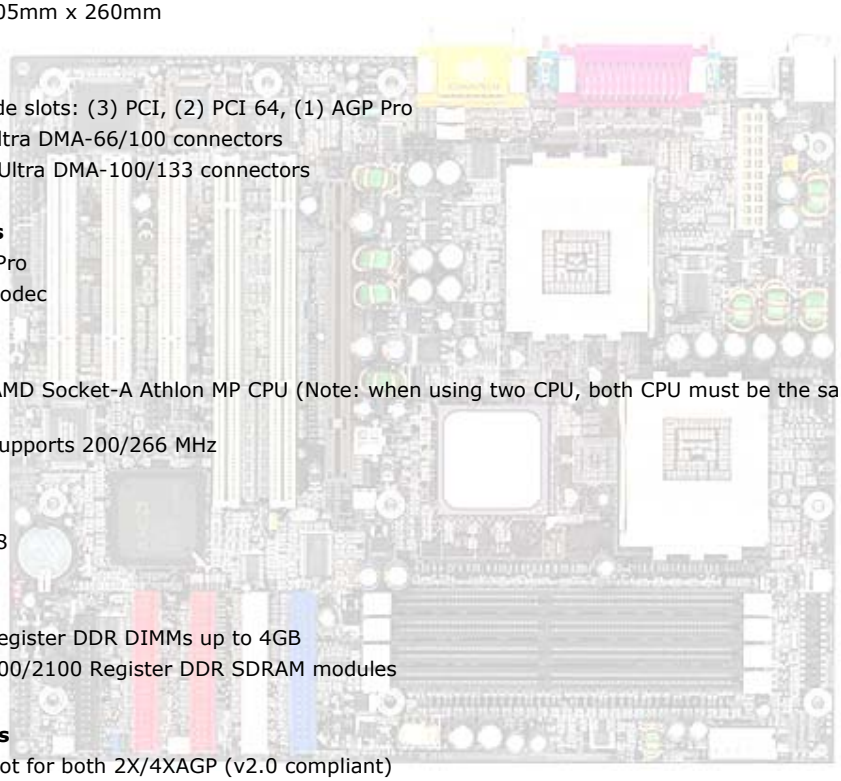
- **Mātesplates (divprocesoru) piemērs: Chaintech 7KDD**

Hardware

- CPU: Dual AMD® Socket-A Athlon MP
- System frequency: 200/266 MHz FSB
- Chipset: AMD® 762 + 768
- Memory: (4) Register DDR SDRAM DIMMs (4GB)

Physical

- Form Factor: ATX
- Dimensions: 305mm x 260mm



Expansion

- Internal upgrade slots: (3) PCI, (2) PCI 64, (1) AGP Pro
- IDE Bus: (2) Ultra DMA-66/100 connectors
- IDE RAID: (2) Ultra DMA-100/133 connectors

AV Subsystems

- Video: 4XAGP Pro
- Audio: AC'97 Codec

CPU

- Supports two AMD Socket-A Athlon MP CPU (Note: when using two CPU, both CPU must be the same frequency)
- System clock supports 200/266 MHz

Chipset

- AMD 762 + 768

Main Memory

- Four 184 pin Register DDR DIMMs up to 4GB
- Supports PC1600/2100 Register DDR SDRAM modules

Expansion Slots

- One AGP Pro slot for both 2X/4XAGP (v2.0 compliant)
- Three 32-Bit PCI slots (v2.2 compliant)
- Two 64-Bit / 66MHz PCI slots

Audio Subsystem

- On-board Audio subsystem via AC-link with external high quality AC'97 CODEC
- Complete software driver supports for Windows OS

Video Subsystem

- One AGP Pro slot for both 2X/4XAGP (v2.0 compliant)

UltraDMA IDE Ports

- **Ultra DMA-66/100 PCI IDE Controller**
- Supports two IDE ports up to 4 ATAPI devices
- Supports PIO Mode 4 up to 16.6MBps, Multi Mode 4 up to 66MBps and Multi Word Mode 5 up to 100MBps with Bus Mastering
- Bus-Mastering software drivers for all common multi-tasking operating systems
- **On board IDE RAID Controller**
- Promise PDC20265R IDE RAID controller supports extra two UltraDMA -100/133 IDE ports with RAID 0/1

Embedded USB Controller

- Integrated USB 1.1/2.0 Controller

- UHCI compliant USB host controller with Root hub
- Four USB1.1 ports with over-current protection
- On-board NEC chip supports four USB2.0 ports
- Optional USB adapters for additional two USB1.1 and four USB2.0 ports

On Board Super I/O Controller
- ITE 8712 LPC I/O with system monitors hardware
- Three UARTs support two serial port and IR function (up to 115.2Kbps) for HPSIR and ASKIR
- One SPP/ECP/EPP parallel port
- One floppy disk drive connector supports up to 2.88MB

Embedded system monitoring
- 8 external voltage inputs
- 2 temperature sensing for CPU and system
- 2 Fan speed (CPU and system) monitoring with on/off control in suspend

Boot-Block Flash ROM
- Award system BIOS support PnP, APM, DMI, ACPI, & Multi-device booting features

Software
- Driver CD (Chipset Autodetect)
- Value Pack 2002

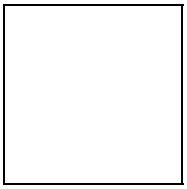
Slot 2

Mātesplates ar Slot 2 centrālā procesora (CPU) spraudni var izmantot Intel Xeon. Tās ir paredzētas vidēji augstas, augstas veiktspējas datoriem vai serveriem. Parasti izmanto kā daudz procesoru sistēmas.

Uz doto momentu populārākajām mātesplatēm (MB) ar Slot 2 spraudni par pamatu kalpo sekojošas mātesplates mikroshēmas:

- Intel E7500, 860, 440GX
- ServerWorks GC-LE, GC-SL (1 vai 2 procesori), GL-HE (1 vai 2 vai 4 CPU)

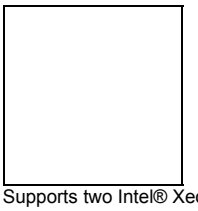
- Intel E7500



The Intel® E7500 chipset represents the next step in Intel® server chipset technology. The first in a family of volume chipsets, the Intel E7500 chipset supports dual processor server platforms optimized for the Intel® Xeon™ processor with 512 KB L2 cache and Intel® NetBurst™ microarchitecture. The Intel E7500 chipset design delivers maximized system bus, memory, and I/O bandwidth to enhance performance, scalability, and end-user productivity while providing a smooth transition to the next-generation server technologies.

Features that Maximize Performance and Balance the Platform

- Dual Intel Xeon processors with 512 KB L2 cache and a 400 MHz system bus provide up to 3.2 GB/s of available bandwidth.
- Dual DDR-200 memory channels operate in lock-step to provide up to 3.2 GB/s of memory bandwidth.
- Three Hub Interface 2.0 connections provide multiple high-bandwidth I/O configuration options, yielding up to 3.2 GB/s of I/O bandwidth.



Supports two Intel® Xeon™ processors with 512 KB L2 cache for dual-processing server platforms	Delivers a platform that brings Intel® NetBurst™ microarchitecture and Hyper-Threading Technology of the Intel Xeon processor to deliver best-in-class performance for peak server workloads.
400 MHz system bus capability	Supports a high-performance, balanced platform by enabling a 3.2 GB/s system bus bandwidth that can support greater memory and I/O bandwidths.
Intel® Hub Architecture 2.0 connection to the MCH	This point-to-point connection between the MCH and the three P64H2 devices provides greater than 1 GB/s of bandwidth. ECC protection, coupled with high data transfer rates, supports I/O segments with greater reliability and faster access to high-speed networks.
64-bit PCI/PCI-X Controller Hub-2	Introduces next-generation PCI/PCI-X performance and significantly enhances platform flexibility. Two independent 64-bit, 133 MHz PCI-X segments and two hot-plug controllers (one per segment) for each P64H2 allow up to six PCI-X buses per system.
Dual-channel DDR-200 memory interface	Offers a maximum memory bandwidth of 3.2 GB/s through a 144-bit wide, 200 MHz Double Data Rate SDRAM memory interface with densities up to 512 megabits.
Advanced Platform RASUM	Features such as memory ECC x4 Single Device Data Correction (SDDC), hardware memory scrubbing, MCH SMBus target interface, hub interface ECC, and the availability of enhanced error status information maintained through reset yield a more reliable platform.

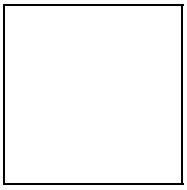
Benefits of Advanced Technology and I/O Flexibility

The Intel E7500 chipset utilizes a modular design and offers platform implementation flexibility to meet the expanding needs of dual processor (DP) servers through three core components:

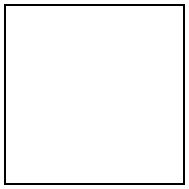
- The Intel® E7500 Chipset Memory Controller Hub (MCH) is the central hub for all data passing through core system elements such as the dual Intel Xeon processors with 512 KB L2 cache via the system bus interface, the memory via memory interface, and both the 64-bit PCI/PCI-X and I/O controller hubs via Intel® Hub Interfaces. The Intel E7500 chipset delivers compelling performance at 3.2 GB/s of bandwidth across the 400 MHz system bus and up to 3.2 GB/s of bandwidth across two high-performance Double Data Rate SDRAM memory channels. To balance the performance offered by the processor and memory interfaces, the MCH allows several high-bandwidth I/O configuration options for a total of 3.2 GB/s of I/O bandwidth. Together, these features deliver balanced, high-throughput system performance for dual processor server platforms.
- The Intel® 82870P2 64-bit PCI/PCI-X Controller Hub 2 (P64H2) connects to the MCH through a point-to-point Hub Interface 2.0 connection. Up to three P64H2 devices can be attached to the MCH, each providing an I/O bandwidth greater than 1 GB/s for a total of 3.2 GB/s of I/O bandwidth. Each P64H2 contains two independent 64-bit PCI-X interfaces and two PCI hot plug controllers, one per PCI-X interface. Each 64-bit PCI-X segment supports multiple PCI-X slots for high-bandwidth connectivity of next-generation components such as Intel® Gigabit Ethernet adapters and Intel® I/O processors.

The Intel® 82801CA I/O Controller Hub 3-S (ICH3-S) connects to the MCH through a point-to-point Hub Interface 1.5 connection. The ICH3-S provides legacy I/O interfaces through integrated features including a two-channel Ultra ATA/100 bus master IDE controller and three USB controllers for up to six USB ports. The ICH3-S also offers an integrated System Manageability Bus 2.0 (SMBus 2.0) controller, an integrated LAN controller, as well as AC97 2.2-compliant and PCI 2.2-compliant interfaces.

- Intel 860



As the next step in the evolution of Intel® Hub Architecture, the Intel® 860 chipset was specifically designed to meet the needs of high performance multi-processor systems. The Intel 860 chipset, together with the latest Intel® Xeon™ processors for DP workstations, provide new levels of performance, scalability, and end-user productivity.



A Scalable Design with Big Benefits
The Intel® 860 chipset utilizes the new modular design of the 800 family of chipsets. Like other 800 series chipsets, the Intel® 860 chipset has two core components:

- The 82860 Memory Controller Hub (MCH) is the main interface to the processor host bus, the memory and graphics interface. The Intel® 860 chipset delivers compelling performance with its dual high performance RDRAM* memorychannels, a 400 MHz system bus, and multiple I/O configuration options, including the ability to add up to two high performance 64-bit 66 MHz PCI segments. In addition, it provides the latest graphics support through 1.5V AGP4X technology. Together, these features deliver the highest total bandwidth capabilities to the workstation platform.

- The enhanced 82801BA I/O Controller Hub (ICH2) delivers twice the I/O bandwidth over traditional bridge architecture and provides dedicated data paths to fully optimize the additional bandwidth. The ICH2 makes a direct connection from the graphics and memory for faster access to peripherals and provides the features and bandwidth required for the workstation environment. The ICH2 supports 32-bit PCI, and has been enhanced to include support for Ultra ATA/100, integrated LAN controller, and dual USB controllers. Dual USB controllers can be used to configure four full bandwidth USB ports. Other enhancements include support for six channels of digital audio for digital surround sound support, AC'97 support, and SM bus enhancements.

In addition to providing high performance, the Intel® 860 chipset was designed for scalability. Two optional components may be used with the core components:

- The 82806AA 64-bit PCI Controller Hub (P64H) supports the 64-bit PCI slots at speeds of either 33 MHz or 66 MHz. The P64H takes advantage of the Intel® Hub Architecture, connecting directly to the MCH and providing a dedicated path for high performance I/O.

- For systems needing greater memory capacity, an 82803AA RDRAM-based memory repeater hub (MRH-R) may be utilized. The MRH-R converts each memory channel into two memory channels, doubling memory capacity.

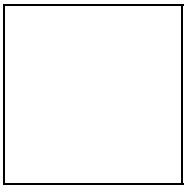
Features Maximize Performance

- Dual RDRAM memory channels, operating in lock-step, deliver 3.2 GB/s of memory bandwidth to the processor.

- The Direct AGP port provides up to 1 GB/s of graphics bandwidth.

- The Intel® 860 chipset supports up to two processors using a 400 MHz system bus.

- A prefetch cache, integrated into the Intel® 860 chipset, allows highly efficient data flow and helps minimize system concurrency.



FEATURES	BENEFITS
Supports two Intel® Xeon™ processors with 512 KB L2 cache for dual-processing server platforms	Delivers a platform that brings Intel® NetBurst™ microarchitecture and Hyper-Threading Technology of the Intel Xeon processor
400 MHz system bus capability	Delivers a balanced system matching the system bus BW of 3.2 GB/s with the memory bus of 3.2 GB/s
Intel® Hub Architecture with optional P64H	Dual 64-bit 66 MHz I/O segments for fast drive access and high speed networks
AGP4X	1 GB/s of graphics bandwidth allows highest graphics performance on IA platforms
MRH-R (RDRAM based repeater hub)	Extends RDRAM memory capacities and increases system scalability
Dual RDRAM channels	Maximum memory performance (3.2 GB/s)
Prefetch Cache	Maximizes system concurrency so that simultaneous processes do not impact system performance
Dual USB controllers	Enhanced Plug and Play with four full BW USB ports

- ServerWorks Grand Champion LE (GC-LE)

Features

Pentium 4 and Pentium 4 Xeon SystemI/O

- Host Bridge - CMIC LE
- I/O Bridge - CIOB-X2
- South Bridge - CSB5

CMIC LE

- Processor Interface
  - 2 Way Pentium 4 Xeon
  - 400MHz Front Side Bus; 3.2 GB/s FSB bandwidth
- Memory Controller
  - Dual DDR200 channels
  - 16GB of memory; 2 Way Interleaved
  - 3.2GB/s memory bandwidth
- I/O bridge interface
  - 2 Inter-Module Buses (IMB); 3.2GB/s per bus
  - 1 Thin IMB bus to CSB-5 south bridge

RAS Features

- ECC - 128 bit algorithm; 16bit detection; 8 bit correction
- Memory Scrubbing, Chipkill™
- Spare Memory
- Fault isolation
- Extensive error reporting

CIOB-X2

- Dual PCI-X Buses; supports PCI 2.2
- 64bit; 66/100/133 MHz

CSB5

- PCI 2.2 32-bit/33MHz
- Legacy functions (8237DMA, 8259PIC, 8254Timer)
- PCI to LPC bridge
- XIO-APIC for multiprocessor systems
- 4 Port USB 1.0 interface

Summary of Benefits

Volume 2 Way Multiprocessing Pentium 4 Xeon platform

Performance, Scalability, Reliability, Availability, Modularity

Industry leading performance

- 2 Way MP; up to 16GB DDR200 memory; multiple PCI-X buses
- Bandwidth
  - 6.4GB/s I/O bandwidth across 2 IMBuses, supporting up to 4 independent PCI-X buses
  - 3.2GB/s processor bus bandwidth
  - 3.2GB/s memory bus

Scales to meet OEM requirements

- Up to 4 PCI-X buses
- Up to 16GB of main memory
- Configurable RAS features

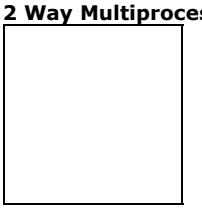
High Reliability and Availability

- Memory integrity assured:
  - Industry's FIRST 16bit detection/8bit correction ECC algorithm
  - Memory Scrubbing
- Memory redundancy prevents data corruption and downtime:
  - Chipkill
  - Spare Memory makes failures transparent and allows IT manager to swap memory when convenient
- CRC checking on IMB
- PCI-X hot plug capable

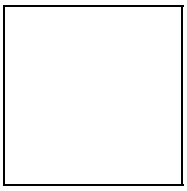
The GC-LE utilizes the IMB to connect the host bridge to a variety of south bridges and I/O bridges. This building block approach, common across all ServerWorks SystemI/O solutions, offers OEMs ease of platform migration and reconfiguration by leveraging existing designs.

- ACPI power management and event detection support
- Dual Channel ATA-100 hard disk controller

2 Way Multiprocessing Server Configuration



GC-LE Server Motherboard



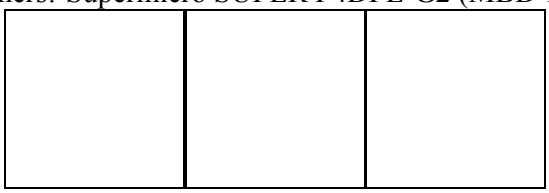
Grand Champion LE Server

The Grand Champion LE is targeted at the volume 2 Way server market. It's a highly scaleable SystemI/O solution for the Pentium 4 and Pentium 4 Xeon family of processors, and can be configured to meet OEMs needs for a variety of product segments.

The Grand Champion LE is the highest performance 2 Way Pentium 4 SystemI/O solution on the market. With dual memory channels capable of supporting up to 16GB of DDR200 memory the GC-LE provides3.2GB/s of memory bandwidth. I/O and processor bandwidth complement the memory bandwidth. Two IMB buses provide support for up to 4, independent PCI-X buses, with 6.4GB/s of bandwidth between them. The FSB provides 3.2GB/s of bandwidth; a 3 fold increase over the Pentium III generation. The high bandwidth, low latency data paths on all interfaces provides the performance next generation enterprise servers require, and with the integrated memory data path, it's ideal for small form factor server appliances and for 1U and 2U rack server configurations.

The GC-LE is an extremely robust platform from a RAS perspective. With a multi-bit memory ECC algorithm, memory scrubbing and Chipkill you can be assured that your data integrity is maintained. If a failure does occur the GC-LE supports Spare Memory configurations so any failure will be invisible to the end user. IT managers can then replace the memory module at their convenience. Additional RAS features are provided on the I/O interfaces. The IMB is CRC protected, and PCI-X supports hot plug cards. Extending the RAS features to the network level, the GC-LE can be combined the BCM5700 or BCM5701 Gigabit NIC solutions to provide failover and load balancing functions.

- Mātesplates piemērs: Supermicro SUPER P4DPE-G2 (MBD-P4DPE-G2-B)

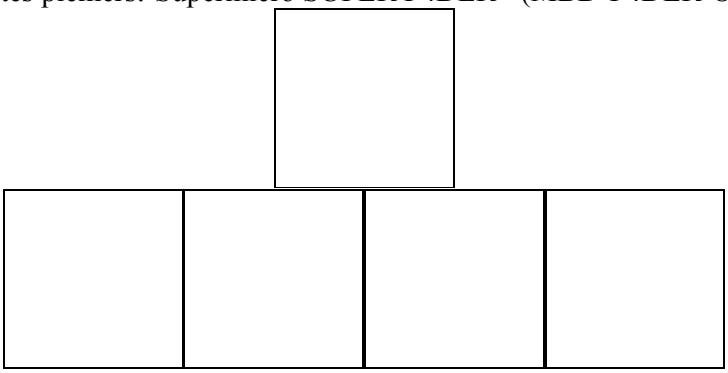


Target Segment	High-end server
Form Factor	Extended ATX Size: 12" x 13.05" (W x H)
Processor Support	Dual Intel® Xeon™ processors up to 2.80GHz with 512K L2 cache
Chipset	Intel E7500 chipset
Front Side Bus	**400 MHz**
Memory	Up to 16 GB ECC registered DDR-200 memory in 8 DIMM slots* Supports only registered ECC memory. Non-ECC or unbuffered memories are not supported. Two-way interleaved memory banks provide outstanding memory performance. (must use a pair of DIMMs for memory to function) (Memory recommendation list)
I/O Expansion	**Total: 6 PCI-X slots** **Max up to 3 64-bit 133MHz PCI-X** **Default setting:** 2 64-bit 100MHz PCI-X 4 64-bit 66MHz PCI 1 VXB (Virtual Extended Bus)
Onboard Devices	Support Intelligent Platform Management Interface (IPMI) ver. 1.5 option Dual EIDE ports support Ultra DMA 100MB/s of Burst data transfer rate, supports UDMA Mode 5, PIO Mode 4 and ATA/100 Intel 82546EB dual port Gigabit Ethernet controller ATI Rage XL 8MB PCI graphic controller 1 Floppy 2 Fast UART 16550 serial ports 1 ECP/EEP parallel port Up to 5 USB ports PS/2 keyboard and mouse ports
PC Health Monitoring	Monitoring the voltages of the CPU core and the status of system power supply (+3.3V, + 5V, + 12V) CPU/chassis temperature monitoring CPU fan auto-off in sleep mode CPU overheat LED header (front panel) chassis intrusion detection (through LDCM) Support for system management software (LDCM)
Special Features	Wake-on-LAN allows for remote network management and configuration of the PC, even in off-hours when the PC is turned off. This reduces the complexity of managing a network. Onboard 3-phase switching power regulator supports CPU core voltages from 1.1-1.85 volts 6 tachometer fan connectors (for CPU, chassis, and thermal control fans) Keyboard wake-up from Soft-off CPU frequency settings - changeable in BIOS setup Connector for LED overheat indicator Overheat backup fan connector for CPU protection
Management	IPMI (Intelligent Platform Management Interface) 1.5 option LDCM (LANDesk Client Manager) LDSM (LANDesk Server Manager) option Super Doctor software (optional) DMI support
BIOS Features	RTC (Real-Time Clock) wakeup External modem remote ring-on when system is in Soft-Off state BIOS rescue hot keys for rescuing BIOS chip from flash failure Hardware BIOS virus protection Phoenix 4Mb Flash ROM
Other Features	ACPI/APM power management Internal/external modem ring-on Control of power-on mode for recovery from AC power loss One WOL (Wake-On-LAN) connector One chassis intrusion header
Chassis Compatibility	Extended ATX Chassis SC822, SC842, SC742, SC830P4, SC850P4, SC762, SC760P4

	(400W) **To ensure system stability, a 350W (minimum) ATX12V power supply (besides the 20 pins, both 4-pin and 8-pin +12v power connector) is required.** **Please check Support for more details**
Standard Retail Package	One SUPER P4DPE-G2 mainboard CPU heatsink retention and clips 1 three-ended 80-wire/40-pin IDE UDMA/100 ribbon cable for high speed UDMA IDE devices 1 floppy ribbon cable 2 Fan-042 with heatsink One BIOS/drivers CD

* This product has been designed to support 2GB DIMM modules for each memory slot, but it has only been validated on 1GB memory modules.

- Mātesplates piemērs: Supermicro SUPER P4DLR+ (MBD-P4DLR-O+)



Target Segment	High-end server
Form Factor	Extended ATX
	Size: 12" x 13" (W x H)
Processor Support	Dual Intel® Xeon™ processors up to 2.80GHz with 512K L2 cache
Chipset	ServerWorks GC-LE chipset
Front Side Bus	**400 MHz**
Memory	Up to 8 GB ECC registered DDR-200 memory in 4 DIMM slots*
	Supports only registered ECC memory. Non-ECC or unbuffered memories are not supported.
	Two-way interleaved memory banks provide outstanding memory performance. (must use a pair of DIMMs for memory to function) (Memory recommendation list)
I/O Expansion	**1 64-bit 133MHz PCI-X**
Onboard Devices	Zero-channel RAID support option
	Intelligent Platform Management Interface (IPMI) ver. 1.5 option
	Dual EIDE ports support Ultra DMA 100MB/s of Burst data transfer rate, supports UDMA Mode 5, PIO Mode 4 and ATA/100
	Onboard Adaptec AIC-7899W dual channel Ultra160 SCSI controller
	2 Intel 82550 fast Ethernet
	ATI Rage XL 8MB PCI graphic controller
	1 Floppy
	2 Fast UART 16550 serial ports
	Up to 4 USB ports
	PS/2 keyboard and mouse ports
PC Health Monitoring	Monitoring the voltages of the CPU core and the status of system power supply (+3.3V, + 5V, + 12V)
	CPU/chassis temperature monitoring
	CPU fan auto-off in sleep mode
	CPU overheat LED header (front panel)
	chassis intrusion detection (through LDCM)
	Support for system management software (LDCM)
Special Features	Wake-on-LAN allows for remote network management and configuration of the PC, even in off-hours when the PC is turned off. This reduces the complexity of managing a network.
	Onboard 3-phase switching power regulator supports CPU core voltages from 1.1-1.85 volts
	5 tachometer fan connectors (for CPU, chassis, and thermal control fans)
	Keyboard wake-up from Soft-off

	CPU frequency settings - changeable by DIP switch
	Connector for LED overheat indicator
	Overheat backup fan connector for CPU protection
Management	IPMI (Intelligent Platform Management Interface) 1.5 option
	LDCM (LANDesk Client Manager)
	LDSM (LANDesk Server Manager) option
	Super Doctor software (optional)
	DMI support
BIOS Features	RTC (Real-Time Clock) wakeup
	External modem remote ring-on when system is in Soft-Off state
	BIOS rescue hot keys for rescuing BIOS chip from flash failure
	Hardware BIOS virus protection
	AMI 4Mb Flash ROM
Other Features	ACPI/APM power management
	Internal/external modem ring-on
	Control of power-on mode for recovery from AC power loss
	One WOL (Wake-On-LAN) connector
	One chassis intrusion header
Chassis Compatibility	Extended ATX Chassis
	SC822, SC812
	To ensure system stability, a 400W (minimum) ATX12V power supply (besides the 20 pins, both 4-pin and 8-pin +12v power connector) is required.
	Please check Support for more details
Standard Retail Package	One SUPER P4DLR+ mainboard
	CPU heatsink retention and clips
	1 three-ended 80-wire/40-pin IDE UDMA/100 ribbon cable for high speed UDMA IDE devices
	1 floppy ribbon cable
	2 Fan-042 with heatsink
	One BIOS/drivers CD

* This product has been designed to support 2GB DIMM modules for each memory slot, but it has only been validated on 1GB memory modules.

Litertūra

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7. www.shuttle.com.ru
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